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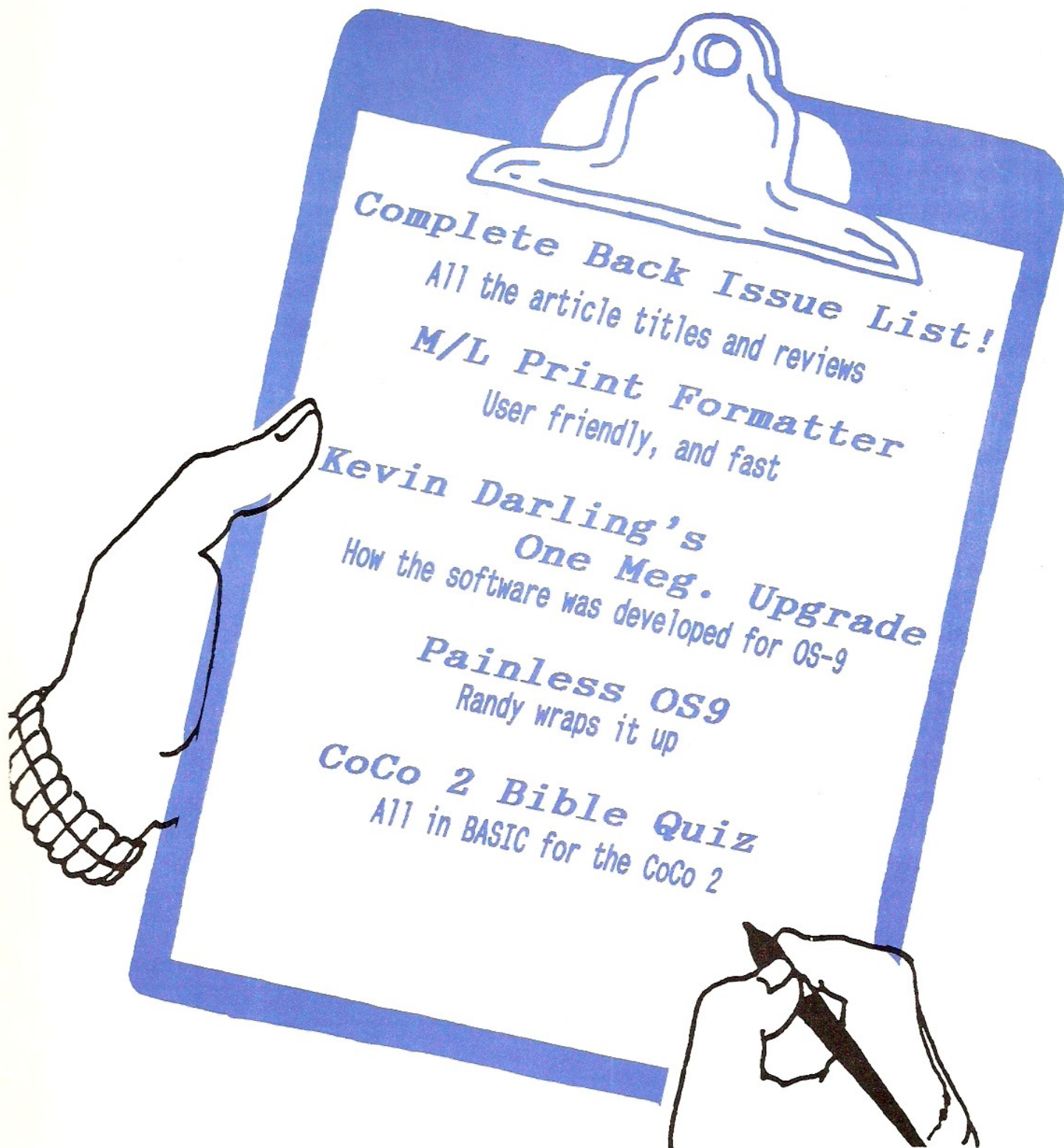
Vol. 3 Issue 3 Jan./Feb. 1990

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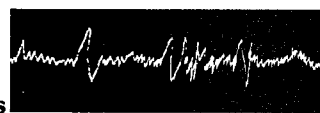
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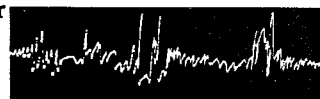
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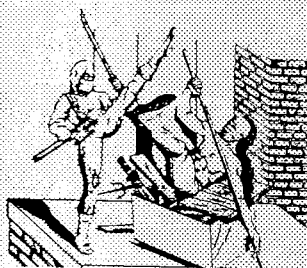
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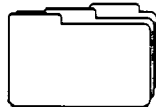
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CoCo Clipboard Magazine

Vol. 3 Issue 3 Jan./Feb. 1990

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As we go to press . . .

Believe it or not we are just about ready to catch up on your late arriving magazines. The March/April edition is just about ready to go to press with a super program for all of you who enjoy stargazing! Our column by Claude Giguere "en Francais" will be back next month and for all of you C.C.B.M.S. readers Jim says we will have more to come in May and June. Randy Krippner finishes his Painless OS9 column and in May/June we will be starting our new column on PASCAL. I'll be in Rockville, MD attending the Genie Sysop Convention at the end of March. Starting in the next issue we will begin to throw our support behind Genie and the Tandy/CoCo Round Table they offer. See you next month!

From The Desk Of . . .

Ted and Darlene Paul

It is 1990 and a new year, and depending on who you talk to it is either the last year of the decade of the 80's or the first year of the decade of the 90's. For my Color Computer it is just another year of doing business, and keeping in contact with many of you on the Hayes BBS.

Goodbye and Hello

One change that has occurred is that I am no longer a subscriber to CompuServe. My thanks to Dan Robins, Mike Ward, Steve Wegert and Wayne Day for all their help in the past. CompuServe provides a tremendous amount of information not only on the Color Computer, but on hundreds of other areas of interest. If you have a CompuServe node (phone number) in your local calling area you should give it a try. Radio Shack carries a start up kit for about \$29.95 that you can use with your Color Computer and gives you a \$25.00 usage credit.

You will find me checking in will be the Hayes BBS at (404) 446-6336. In operation 24 hours a day the BBS is provided at no charge by the Hayes Modem Company. You can leave private E-Mail via the Lounge selection and public messages in the Color Computer SIG. Kent Pirkle is the Color Computer Sysop and Randy Cooper the Hayes Co. Sysop.

Back Issue Information

One project that has been finished is a complete list of all of our back issues. The list is printed here in this issue and is right in the middle of the magazine. On either side of the center pages are *Clipboard* ads. You can remove the center pages without losing any editorial material.

The list shows that we have printed 14 editions spanning two plus years. We have printed 212 articles including reviews. Of the 212 articles, reviews make up 30 percent of what we have presented. We have printed articles on a wide area of interest including commentaries, database philosophies and readers letters. We have printed programs in BASIC, Machine Language, "C", BASIC 09, Pascal and OS9. I am not sure, but I think we have printed more articles on the Color Computer and Ham

Radio than any other Color Computer magazine. My thanks to Mike Dooley and Jerry Murphy. In the next issue we will publish what I believe to be the largest, most complex hardware and software article yet attempted by a Color Computer magazine.

Through the courtesy of Kalbach Publishing, we have been granted the rights to reprint an article which first appeared in issue 38 of Telescope Making Magazine. I won't say more, but you should be able to read between the lines.

Important Information

To save space I usually don't put a blank space between paragraphs or sections, but this is important and so I wanted it to stand out a bit. Two important areas need to be addressed so here goes:

The first area of concern regards how we mail *CoCo Clipboard Magazine*. In order to keep our costs, and frankly your costs as low as possible, we decided from the beginning to mail your magazine via third class mail. Many, many magazines are mailed second class but it would actually take more time and therefore cost more to do this for *Clipboard*. While slower than second class, third class does get the job done in 98% of all situations. Where it doesn't can be boiled down into two areas - poor service from post offices which regard third class as "junk" mail and poor addresses received from our subscribers.

Point in case from the Post Office. I was mailing some rather mundane stuff not too long ago and I overheard a conversation between a carrier and what I suppose was a supervisor. "What difference does it make," said the carrier, "they just throw it out anyway, we're just doing them a favor." What the supervisor was saying wasn't clear, but the gist of it was that the carrier was wrong and these items had to be delivered. Obviously the carrier disagreed. I went straight to the postmaster and made my feelings known in no uncertain terms.

The second problem is getting the right address. Most folks have an address that

From The Desk continued on 5

From The Desk continued from 4

looks like this:

Joe Dokes
875 Cleveland Ave.
New York, NY 10000

Sometimes a line is added for an apartment number. However many folks have complex addresses which involve building, condos, rural route delivery, Star Routes and other types of addressing. What is common and normal in your area might be totally unusual for us. Your address must look something like this:

Your First Name, Last Name
Your Street or RR #
Your Box Number / Star Route or
Bldg # / Apt #
Your City, State, Zip

For example:

Joe Dokes
RR# 1
Box 455 - A
Westerly, VA 99999

Remember when Mrs. Frump or Sister Theresa would beat on you for your lousy penmanship? Well some of you still need to hear it again. If we can't read it, decipher it, have it translated or otherwise figure out where you are we can't send you a magazine. If your hand writing looks like you live in an earthquake zone and you tend to write things while the perched on an out of balance washing machine in the spine cycle do me a favor - CALL IN YOUR ORDER or have somebody write it out for you! I will apologize now for those of you who take umbrage at this, but there are times when it really is difficult to read your writing.

The second point concerns changes in your address. In order to get your magazine to you we must have your current address. The Post Office will not forward third class mail. If you move, you must send us a change of address card. They are available at every post office and postal sub station in the country. Please send it to us as soon as you can. If we receive your change of address AFTER the magazine is mailed we cannot send you a free replacement issue. The question then becomes, "when is the magazine mailed?" You can assume that we will mail the magazine by the third week of a publication month. I know we have been late, but we are working to make up this time lag as fast as possible. Therefore we need your address change by the first week of a publication month.

Finally

Two other last minute notes have crossed my desk in the last few days... Tothian Software in Pennsylvannia has closed up shop. Jim Mortimer hung up the "Gone Fishing" sign on December 31st. Our thanks to Jim for his past support of *Clipboard* and the CoCo Community in general. On a more positive note TOMELA*CO the people who bring you Bowling League Secretary continue their excellent support of their product. Tom Barnett has sent me another copy of their current newsletter. Many of you complain about lousy service and poor support from software houses. TOMELA*CO is not one of those companies. If you are a bowler and must keep stats on your league then Bowling League Secretary is a program. If you're looking for a way to make a few bucks with your CoCo then Bowling League Secretary might be the way for you to do so. Be sure to check out their ad in this issue and give Tom a call for full details.

That's all for this edition.

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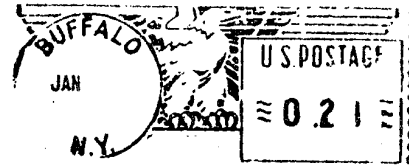
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Reader Mail



...About those reviews!

Dear Ted & Darlene:

Here's my check for a one year subscription and back issues.

Best wishes on your venture. I wish I had heard about it earlier. What struck an immediate chord when I read your flier (which came with an order from Orion) was the promise of real reviews. I hope Clipboard fills the bill!

Bill Condie
New York, NY

Dear Bill:

Sometimes running those long reviews can be frustrating because there are so many things we'd like to review in each issue and we never have enough room. But the overwhelming opinions of our readers has been for longer, more indepth reviews. I think you'll like what is in this issue.

.. A call to arms?

Dear Ted:

I read your editorial in the July/August 1989 issue with interest. I hope I'm wrong, but I'm afraid your call to arms may have come a couple of years too late.

You chide users for thinking of the CoCo as "poor cousin" to some other system. Yet, the party most guilty of "poor cousin thinking" is Tandy itself.

I was surprised to find that the CoCo was listed in the 1990 catalog. This is somewhat heartening to users like myself who expected the CoCo to be discontinued this year.

The CoCo used to be turned on with one or two games running in the stores. Then it went downhill so where it would just be turned on and kids would come in and type obscenities on the scree. Now the CoCo sits in a dusty corner. It is not even turned on anymore. There are only a few pieces of software available. I think most of us quit visiting Radio Shack to "see

what's new" long ago.

Let's take a look at the third party market. The list of vendors who have quit or moved on to other machines would read like a Who's Who of CoCo supporters. How many of these would still be around if Tandy actively solicited their help in making the CoCo a success. It is time for Tandy to "seize the day". There are several steps that could keep the CoCo viable for years.

First, they should sell Clipboard and RAINBOW in their stores. It would get CoCo owners back into the stores at least once a month.

Second they should resume stocking more software titles. Where interest exists for a program they should get someone to write it.

They should bring back the Multipak Interface and sell third party hardware like Burke & Burkes Hard Drive interface.

I have owned a CoCo for 8 years and am tired of watching Tandy treat the CoCo as a poor cousin. In Popeye's imortal words "that's all I can stand 'cause I can't stands no more."

Dave Jenkins
Evansville, IN

Dear Dave:

I too am troubled at finding the CoCo in the off position when entering a Radio Shack. Here in our area the manager does a good job on the CoCo and software. But many major malls I have visited they don't. It's too bad too. A small CoCo system at \$400-500 is not a bad sale. It's got to be easier to move 3 CoCo systems at that price than 3 PC systems at \$1600. especially if the customer just getting started.

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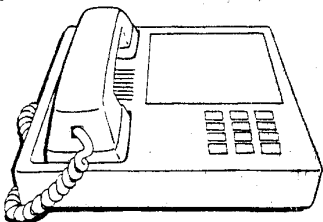
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Plumbers Helper

Bill Wills

It's Saturday and you decided to fix that leaky faucet in the upstairs bathroom. You head for the basement to shut off the water, only to face a tangled mess of valves and copper pipes zigzagging thru the basement ceiling.

Which valve do you turn off? You call out to your wife, asking her for help. You hear an "Aargh, what do you want now?" You tell her you need her to go upstairs to the bathroom and tell you when the water is off. After turning off and on five or more valves, you think you hear her yelling down to you. You yell to her "Is the water off?" "Yes it's off, can't you hear." Now, you can finally start fixing that leaky faucet.

The PLUMBER'S HELPER will eliminate this problem for you. It will label all your valves with ID tags showing what they control. Yes, you will need the help of your wife one more time.

To start the program, run "PLUMBER". A main menu will appear listing the programs's options.

SET-UP SHEET

This is the first option you will select. You will be asked for the number of valves in your basement. Once you have given the program this information, you will be told to put your printer on line and press ENTER when ready.

The program will print out a questionnaire that will ask you what each valve controls and whether it is for hot water, cold water or gas. At the bottom of the sheet the program will print out strips. Each strip will be labeled Valve 1, Valve 2, etc. Cut out each strip. These strips will be used to temporarily identify each valve.

Now, that you have your set-up sheet, you are ready to go to the basement and find out what each valve controls. Just write the information down on the sheet-up sheet for each valve and put the corresponding strip on the valve. You will need the help of your wife or a friend.

ENTER VALVES

Now that you have all your information written down about each valve, select this option. You will be asked for a file name

of 8 characters or less. The program will add the extension. The program will then ask you to enter the information you have on your set-up sheet. The program will automatically store this information to your disk.

PRINT ID TAGS

This option will print out labels with all the information on it for each valve. You will be asked for the file name that you have your valve data stored in. The program will then tell you to put mailing labels in your printer and to press ENTER when ready.

Once you have your labels printed out, attach them to a piece of poster board or thin cardboard. Cut out each label and punch a hole in the center right hand side. You can fasten the labels to each valve by threading a piece of string or wire tie thru the hole and attaching it just behind the valve on the copper pipe. If you want to add extra protection to the labels, wrap each one with clear contact paper.

ADD VALVES

This option will allow you to add valves to your list at a later date if you do any remodeling. You can also use it to enter any valves that you forgot to enter the first time.

The program will ask you for the file name that you want to update. Next, it will ask you to enter the number of valves you want to add. It will then tell you to enter the information about the valves, just like you did in the enter valve option. You will then be prompted to put labels in your printer and press ENTER when ready to print.

NOTES

The baud rate is set at 600 baud. If your printer is capable of higher baud rates, change line 80 to:

```
POKE 150,1 (for 9600 baud)
POKE 150,18 (for 2400 baud)
POKE 150,40 (for 1200 baud)
```

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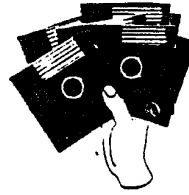
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The printer used with this program is a Star NX1000. The control codes are as follow:

Line 740 CHR\$(12) Form Feed
Line 1640 CHR\$(27);CHR\$(87);CHR\$(49)
Expanded On
Line 1690 CHR\$(27);CHR\$(87);CHR\$(48)
Expanded Off

I hope PLUMBER'S HELPER will make your repair work a little bit easier, I know it helped me. My wife think the program is great too.

(Any questions about this program may be directed to the author at 202 Meadowbrook Avenue, Boardman, OH 44512. Please enclose a SASE for a replay.)



This program is available on *ClipDisk*. A single issue is just \$9.95, a full year is only \$49.95. Phone orders are accepted at (716) 679-0126 - please have your credit card ready. You may also order by mail by enclosing your check or money order to *CoCo Clipboard Magazine*. Our address is 3742 U.S. 20, Box 3, Fredonia, NY 14063 U.S.A. Slightly higher prices for overseas orders.

```
10 '  
20 'THE PLUMBER'S HELPER  
30 'BY WILLIAM WILLS  
40 '  
50 '(C) OCTOBER 1989  
60 '  
70 GOTO 1920  
80 CLEAR10000:POKE150,87:CL$=STR  
ING$(29,32):GOTO460  
90 '  
100 '**** SUBROUTINES ****  
110 '  
120 'CLEAR TEXT FROM SCREEN  
130 '  
140 Y=0:FOR Y=258 TO 450 STEP32  
150 PRINT@Y,CL$;  
160 NEXT Y  
170 RETURN
```

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continued from 9

```

180 PRINT@258,CL$
190 RETURN
200 PRINT@162,CL$;
210 RETURN
220 Y=0:FOR Y=258 TO 290 STEP32
230 PRINT@Y,CL$;
240 NEXT Y
250 RETURN
260 PRINT@130,STRING$(28,32);:RE
TURN
270 PRINT@162,STRING$(10,32);
280 RETURN
290 '
300 'OPEN FILES
310 '
320 CLS:PRINT@225,"ENTER 8 CHARA
CTERS OR LESS"
330 PRINT@257,"DON'T INCLUDE EXT
ENTION"
340 PRINT@324,;:LINEINPUT"ENTER
FILE NAME ";F$
350 IF LEN(F$)>8 GOTO 390
360 F$=F$+".PLB"
370 OPEN"D",#1,F$,36
380 RETURN
390 PRINT@351,"FILE NAME TOO LON
G"
400 PRINT@383,"PLEASE ENTER AGAI
N"
410 FOR Y=1 TO 1000:NEXT Y
420 GOTO 320
430 '
440 '**** MAIN MENU ****
450 '
460 CLS:PRINT@39,"THE PLUMBER'S
HELPER"
470 PRINT@102,"WHAT DO YOU WANT
TO DO?"
480 PRINT@167,"1) SET UP SHEET"
490 PRINT@199,"2) ENTER VALVES"
500 PRINT@231,"3) PRINT ID LABEL
S"
510 PRINT@263,"4) ADD VALVES"
520 PRINT@295,"5) END PROGRAM"
530 PRINT@357,"SELECT BY NUMBER
(1-5)"
540 PRINT@420,"IF THIS IS THE FI
RST TIME":PRINT@452,"RUNNING PRO
GRAM, SELECT 1."
550 A$=INKEY$:IF A$=""THEN 550
560 ON INSTR("12345",A$) GOSUB 6
10,840,1440,1730,1860
570 GOTO 460
580 '
590 '**** SET UP SHEET ****
600 '
610 CLS:PRINT@100,;:LINEINPUT"EN
TER NUMBER OF VALVES ";V$
620 V=VAL(V$)
630 CLS:PRINT@228,"PUT YOUR PRIN
TER ONLINE"
640 PRINT@260,"PRESS ANY KEY WHE
N READY"
650 IF LEN(INKEY$)=0 THEN 650
660 PRINT#-2,TAB(25);"THE PLUMBE
R'S HELPER SET UP SHEET":PRINT#-
2,STRING$(80,42)
670 PRINT#-2,"NUMBER OF VALVES "
V$:PRINT#-2:PRINT#-2
680 X=0:FOR X=1 TO V
690 PRINT#-2,"VALVE# ";X:PRINT#-
2
700 PRINT#-2,"ROOM/ITEM";:PRINT#
-2,STRING$(40,45)
710 PRINT#-2,"( ) HOT WATER (
) COLD WATER ( ) GAS":PRINT#-2
720 NEXT X
730 PRINT#-2,CHR$(12)
740 PRINT#-2,"THESE ARE YOUR TEM
PORARY LABELS. CUT THEM OUT AND
PLACE ON VALVE."
750 PRINT#-2,STRING$(79,45)
760 X=0:FOR X=1 TO V
770 PRINT#-2,"VALVE# ";X
780 PRINT#-2,STRING$(79,45)
790 NEXT X
800 RETURN
810 '
820 '**** ENTER VALVES ****
830 '
840 GOSUB 320
850 CLS:PRINT@228,;:LINEINPUT"EN
TER NUMBER OF VALVES ";V$
860 V=VAL(V$):Y=1:R=0
870 CL$=STRING$(30,32)
880 CLS:PRINT@33,CHR$(129);STRIN
G$(28,131);CHR$(130);
890 PRINT@65,CHR$(133);"VALVE# "
;:PRINT@94,CHR$(138);
900 FOR X=97 TO 186 STEP32
910 PRINT@X,CHR$(133);:PRINT@X+2
9,CHR$(138)
920 NEXT X
930 PRINT@193,CHR$(132);STRING$(
28,140);CHR$(136);
940 FOR R=Y TO V
950 PRINT@72,R;
960 PRINT@258,"ENTER ROOM/ITEM":
PRINT@130,;:LINEINPUT I$:PRINT@1
58,CHR$(138)
970 IF E=1 GOTO 1290
980 GOSUB 180
990 PRINT@258,"WHAT DOES VALVE C
ONTROL?"
1000 PRINT@325,"1) HOT WATER"
1010 PRINT@357,"2) COLD WATER"
1020 PRINT@389,"3) GAS"
1030 PRINT@450,"SELECT BY NUMBER
S (1-3)"
1040 A$=INKEY$:IF A$=""THEN 1040
1050 ON INSTR("123",A$) GOTO 107
0,1080,1090
1060 GOTO 1040
1070 C$="HOT WATER":GOTO 1100
1080 C$="COLD WATER":GOTO1100
1090 C$="GAS"
1100 PRINT@162,C$;
1110 IF E=1 GOTO 1290
1120 GOSUB 140
1130 PRINT@258,"PRESS <ENTER> TO
CONTINUE OR"
1140 PRINT@290,"<C> TO CORRECT."
1150 A$=INKEY$:IF A$=""THEN 1150
1160 IF A$=CHR$(13) THEN 1190
1170 IF A$="C"THEN 1280
1180 GOTO1130
1190 R$=STR$(R)
1200 WRITE#1,R$,I$,C$
1210 PUT#1,R
1220 GOSUB 220
1230 GOSUB 260
1240 GOSUB 270
1250 NEXT R
1260 CLOSE#1
1270 RETURN
1280 GOSUB 140:E=1
1290 PRINT@258,"WHAT DO YOU WANT
TO CORRECT?"
1300 PRINT@325,"1) ROOM/ITEM"
1310 PRINT@357,"2) WHAT VALVE CO
NTROL"
1320 PRINT@389,"3) RETURN"
1330 PRINT@450,"SELECT BY NUMBER
(1-3)"
1340 A$=INKEY$:IF A$=""THEN 1340
1350 ON INSTR("123",A$) GOTO 137
0,1380,1390
1360 GOTO1340
1370 GOSUB260:GOSUB140:GOTO960
1380 GOSUB270:GOSUB140:GOTO990
1390 GOSUB140:E=0:GOTO1130
1400 GOTO1340
1410 '
1420 '**** PRINT ID LABELS ****
1430 '
1440 GOSUB 320
1450 R=0
1460 CLS:PRINT@228,"DO YOU HAVE
LABELS IN"
1470 PRINT@260,"YOUR PRINTER (Y/
N)?"
1480 A$=INKEY$:IF A$=""THEN1480
1490 IF A$="N"OR A$="n"THEN 1520
1500 IF A$="Y"OR A$="y"THEN 1560
1510 IF A$="Y"OR A$="y"THEN 1560
1520 CLS:PRINT@230,"STOP AND PUT
LABELS"
1530 PRINT@262,"IN YOUR PRINTER.
"
1540 PRINT@324,"PRESS ANY KEY WH
EN READY."
1550 IF LEN(INKEY$)=0 THEN1550
1560 CLS:PRINT@228,"PUT YOUR PRI
NTER ONLINE"
1570 PRINT@260,"PRESS ANY KEY WH
EN READY."
1580 IF LEN(INKEY$)=0 THEN1580
1590 R=R+1
1600 GET#1,R
1610 INPUT#1,R$,I$,C$
1620 CLS:PRINT@228,"NOW PRINTING
VALVE# ";R
1630 PRINT#-2:PRINT#-2,CHR$(27);
CHR$(87);CHR$(49);"VALVE# ";R$:P
RINT#-2
1640 PRINT#-2,I$
1650 PRINT#-2,C$:PRINT#-2
1660 IF LOF(1)<>R THEN 1590
1670 CLOSE#1
1680 PRINT#-2,CHR$(27);CHR$(87);
CHR$(48)
1690 RETURN
1700 '
1710 '**** ADD VALVES ****
1720 '
1730 CLS:A=1
1740 PRINT@288,"HOW MANY VALVES
ARE"
1750 PRINT@260,;:LINEINPUT"YOU G
OING TO ADD?";V$
1760 GOSUB320
1770 V1=VAL(V$):Y=(LOF(1)+1):V=V
1+(Y-1)
1780 GOSUB870
1790 OPEN"D",#1,F$,36
1800 Y=LOF(1):R=Y-V1

```

continued on 16

Bible Quiz

Sebastian LaSpada

Editors Note: We've had many requests for programs for CoCo 2 users as well as something other than "business oriented" material. This program is listed here in this edition for the CoCo 2. ClipDisk has BOTH a CoCo 2 and CoCo 3 versions.

Bible Scripture Quiz is a neat and colorful program written for the 64K CoCo 2 or CoCo 3. It contains pleasing block graphics and sound. It is a quiz on important Bible Scriptures, giving the correct answer for a wrong entry, the number of correct answers at the end of the quiz and a graphic reward if your final score is above 79. The program contains 53 questions.

If you run the CoCo 3 version of the program it is suggested that you type in PALETTE RGB before running the program to insure that the computer will display the yellow and magenta colors.

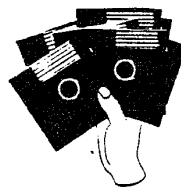
To run Bible Scripture Quiz carefully type in the program lines and then save to tape or disk. The program is self prompting, so simply follow the on screen instructions.

It is of utmost importance that you spell your answers correctly, or the computer will not accept them as correct. The instructions will show you how to type in Scripture verses properly. The more common form of John 3:16 should be typed in as John 3/16.

If you type a correct answer, the program will present you with a brief, colorful, random "CORRECT" screen. If you type an incorrect answer, the program will then give you the correct answer and the quiz will continue. At the end of the quiz, the program will grade your effort.

Sunday School teachers, AWANA Leaders or youth pastors can easily change any of the scripture references and verses. You'll find the DATA statements clearly marked in the program. Be sure to follow the format shown in order to have the program run properly.

I hope you will enjoy the Bible Scripture Quiz. If you have any comments or questions please write to me at 531 Main St., Dunkirk, NY 14063. Please include a stamped self-addressed envelope for a prompt reply.



This program is available on *ClipDisk*. A single issue is just \$9.95, a full year is only \$49.95. Phone orders are accepted at (716) 679-0126 - please have your credit card ready. You may also order by mail by enclosing your check or money order to *CoCo Clipboard Magazine*. Our address is 3742 U.S. 20, Box 3, Fredonia, NY 14063 U.S.A. Slightly higher prices for overseas orders.

```
10 CLS0:SOUND 200,2:FOR D=1TO100
:NEXT:SOUND 200,6
20 CLS0:FOR D=1TO400:NEXT:CLS5:F
OR D=1TO7:NEXT:CLS0:FOR D=1TO400
:NEXT:CLS5:FOR D=1TO10:NEXT:CLS0
:FOR D=1TO500:NEXT
30 CLS0:FOR D=1TO400:NEXT
40 FOR P=0TO8:CLS(P):FOR T=1TO50
:NEXT T,P
50 CLS0:SOUND1,10
60 '***** OPENING SCREEN *****
70 PMODE 4,1:PCLS:SCREEN 1,0
80 FOR I=2TO126STEP2:CIRCLE(128,
96),I,,.68:NEXT
90 SOUND 10,6
100 FOR X=2TO126STEP2:CIRCLE(128
,96),X,,1.7:NEXT
110 SOUND50,6:PCLS:CLS0:FOR H=23
8TO239:PRINT@H,CHR$(140):NEXT
120 CLS0:SOUND150,5:FOR D=1TO400
:NEXT:CLS2:FOR D=1TO5:NEXT:CLS0:
FOR D=1TO400:NEXT:SOUND150,5
130 FOR D=1TO1000:NEXT
```

```
140 FOR X=1TO35
150 F=INT(RND(0)*8)+1
160 SET(RND(64)-1,RND(30)+1,F)
170 SOUND 242,1:NEXT X
180 SOUND210,6:FOR D=1TO800:NEXT
190 PRINT@224," BIBLE SCR
IPTURES "
200 FOR D=1TO2000:NEXT
210 FOR H=192TO223:PRINT@H,CHR$(
140+16):NEXT
220 FOR H=256TO287:PRINT@H,CHR$(
131+16):NEXT
230 SOUND175,5:FOR D=1TO1000:NEX
T
240 GOSUB2480
250 T=0
260 CLS(RND(9))-1
270 SOUND 160,3:SOUND200,6
280 Y=RND(7)*16:FOR H=32TO63:PRI
NT@H,CHR$(131+Y):NEXT:FOR H=224
TO255:PRINT@H,CHR$(140+Y):NEXT
290 PRINT@64," WOULD YOU LIKE T
HE QUESTIONS TO APPEAR AT RA
```

```
NDOM (WITH SOME REPETITIONS
), OR WOULD "
300 PRINT@160," YOU LIKE TO AN
SWER THEM IN ORDER, WITH N
O REPETITIONS? "':FOR D=1TO2000:
NEXT
310 Z=RND(7)*16:FOR H=256TO287:P
RINT@H,CHR$(140+Z):NEXT:FOR H=3
52TO383:PRINT@H,CHR$(131+Z):NEX
T
320 PRINT@288," IF AT RANDOM, T
YPE 'RANDOM' "
330 PRINT@320," IF IN ORDER, T
YPE 'ORDER' "
340 SOUND 185,5
350 FOR H=352TO384:PRINT@H,"":N
EXT
360 INPUT G$
370 IF G$="RANDOM"THEN 950
380 IF G$="ORDER"THEN 1920
```

continued on 12

CoCo Clipboard Magazine

continued from 11

390 IF G\$<>"RANDOM" OR G\$<>"ORDE
R" THEN FOR H=384 TO 415:PRINT@H,CH
R\$(128);:NEXT:SOUND 10,6:GOTO 32
0
400 '***** BIBLE DATA *****
410 DATA I CORINTHIANS 1/26,FOR
YOU SEE YOUR CALLING--BRETHREN--
HOW THAT NOT MANY WISE MEN AFTER
THE FLESH--NOT MANY MIGHTY--
NOT MANY NOBLE ARE CALLED...
420 DATA I CORINTHIANS 1/27,BUT
GOD HAS CHOSEN THE FOOLISH THING
S OF THE WORLD TO CONFOUND THE
WISE--AND GOD HAS CHOSEN THE
WEAK THINGS OF THE WORLD TO
CONFOUND THE THINGS WHICH AR
E MIGHTY...
430 DATA I CORINTHIANS 1/28,...A
ND BASE THINGS OF THE WORLD--AN
D THINGS WHICH ARE DESPISED HA
S GOD CHOSEN--TO BRING TO NOTH
ING THINGS THAT ARE...
440 DATA I CORINTHIANS 1/29,THAT
NO FLESH SHOULD GLORY IN HIS PR
E-SENCE.
450 DATA II TIMOTHY 1/7,FOR GOD
HAS NOT GIVEN US THE SPIRIT OF
FEAR--BUT OF POWER AND OF LOVE
AND OF A SOUND MIND.
460 DATA I CORINTHIANS 6/19,DO Y
OU NOT KNOW THAT YOUR BODY IS T
HE TEMPLE OF THE HOLY SPIRIT WH
ICH IS IN YOU--WHICH YOU HAVE OF

GOD--AND YOU ARE NOT YOUR OW
N?
470 DATA I JOHN 1/9,IF WE CONF
ESS OUR SINS HE IS FAITHFUL AND
JUST TO FORGIVE US OUR SINS AND
TO CLEANSE US FROM ALL UN- RIGH
TEOUSNESS.
480 DATA I JOHN 1/8,IF WE SAY
THAT WE HAVE NO SIN WE DE- CEIV
E OURSELVES AND THE TRUTH IS N
OT IN US.
490 DATA MATTHEW 6/34,THERE- FO
RE DO NOT BE ANXIOUS ABOUT TO
MORROW--FOR TOMORROW WILL BE AN
XIOUS FOR ITSELF. LET THE DA
Y'S OWN TROUBLE BE SUFFICIENT FO
R THE DAY.
500 DATA JOHN 11/25,I AM THE
RESURRECTION AND THE LIFE-- HE W
HO BELIEVES IN ME--THOUGH HE D
IE--YET SHALL HE LIVE.
510 DATA REVELATION 3/8,I KNOW
YOUR WORKS--BEHOLD--I HAVE SET
BEFORE YOU AN OPEN DOOR--AND NO
MAN CAN SHUT IT--FOR YOU HAVE A
LITTLE STRENGTH--AND HAVE KEPT
MY WORD--AND HAVE NOT DENIED MY
NAME.
520 DATA REVELATION 18/4,...COME
OUT OF HER MY PEOPLE--THAT YOU
MAY NOT BE PARTAKERS OF HER
SINS--AND THAT YOU RECEIVE NOT
OF HER PLAGUES.
530 DATA I JOHN 3/4,WHOSO- EVER
COMMITTS SIN TRANSGRESSES ALSO

THE LAW--FOR SIN IS THE TRAN
SGRESSION OF THE LAW.
540 DATA MATTHEW 4/4,...MAN SHA
LL NOT LIVE BY BREAD ALONE-- BUT
BY EVERY WORD THAT PROCEEDS FRO
M THE MOUTH OF GOD.
550 DATA JAMES 1/5,IF ANY OF YO
U LACK WISDOM--LET HIM ASK OF GO
D...
560 DATA MATTHEW 6/33,BUT SE
EK YOU FIRST THE KINGDOM OF GO
D AND HIS RIGHTEOUSNESS--AND AL
L THESE THINGS SHALL BE ADDED UN
TO YOU.
570 DATA I CORINTHIANS 2/11,FOR
WHAT MAN KNOWS THE THINGS OF
A MAN--SAVE THE SPIRIT OF MAN
WHICH IS IN HIM. EVEN SO TH
E THINGS OF GOD KNOWS NO MAN--
BUT THE SPIRIT OF GOD.
580 DATA PHILIPPIANS 2/12,WORK
OUT YOUR OWN SALVATION WITH
FEAR AND TREMBLING.
590 DATA DEUTERONOMY 16/16,THREE
TIMES A YEAR SHALL ALL YOUR
MALES APPEAR BEFORE THE LORD
YOUR GOD IN THE PLACE WHICH H
E SHALL CHOOSE...AND THEY SHALL
NOT APPEAR BEFORE THE LORD
EMPTY.
600 DATA II PETER 3/8,...ONE DA
Y IS WITH THE LORD AS A THOU- SA

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continued from 12

ND YEARS--AND A THOUSAND YE
ARS AS ONE DAY.
610 DATA JOHN 3/16,FOR GOD SO LO
VED THE WORLD THAT HE GAVE HIS O
NLY BEGOTTEN SON--THAT WHOSO
EVER BELIEVES IN HIM SHOULD
D NOT PERISH--BUT HAVE EVERL
ASTING LIFE.
620 DATA II CORINTHIANS 6/14,BE
NOT UNEQUALLY YOKED TOGETHER WI
TH UNBELIEVERS--FOR WHAT FELLO
W- SHIP HAS RIGHTEOUSNESS WITH
UN- RIGHTEOUSNESS?
630 DATA REVELATION 12/10,...FOR
THE ACCUSER OF OUR BRETHREN IS
CAST DOWN--WHO ACCUSES THEM BE
-FORE OUR GOD DAY AND NIGHT.
640 DATA GALATIANS 5/22-23,BUT T
HE FRUIT OF THE SPIRIT IS LOVE--
JOY--PEACE--LONGSUFFERING--
GENTLENESS--GOODNESS--FAITH--
MEEKNESS--TEMPERANCE--AGAINST
SUCH THERE IS NO LAW.
650 DATA I THESSALONIANS 5/17,PR
AY WITHOUT CEASING.
660 DATA ISAIAH 58/13,IF YOU TU
RN AWAY YOUR FOOT FROM THE SA
BBATH--FROM DOING YOUR OWN PL
EASURE ON MY HOLY DAY--AND CA
LL THE SABBATH A DELIGHT--AND SH
ALL HONOR HIM--NOT DOING YOUR OW
N WAYS...
670 DATA MATTHEW 6/14,FOR IF YO
U FORGIVE MEN THEIR TRESPAS- SE
S--YOUR HEAVENLY FATHER ALSO WI
LL FORGIVE YOU.
680 DATA MATTHEW 6/15,BUT IF YO
U DO NOT FORGIVE MEN THEIR TR
ESPASSES--NEITHER WILL YOUR FA
THER FORGIVE YOUR TRESPASSES.
690 DATA II TIMOTHY 2/15,STUDY
TO SHOW YOURSELF APPROVED UNTO
GOD--A WORKMAN THAT NEED NOT BE
ASHAMED--RIGHTLY DIVIDING THE
WORD OF TRUTH.
700 DATA MATTHEW 22/14,FOR M
ANY ARE CALLED--BUT FEW ARE C
HOSEN.
710 DATA II CORINTHIANS 4/4,IN W
HOM THE GOD OF THIS WORLD HAS BL
IN-DED THE MINDS OF THEM WHICH
BE- LIEVE NOT--LEST THE LIGHT OF
THE GLORIOUS GOSPEL OF CHRIS
T-- WHO IS THE IMAGE OF GOD--SHO
ULD SHINE UNTO THEM.
720 DATA I CORINTHIANS 15/51,BE-
-HOLD--I SHOW YOU A MYSTERY--
-WE SHALL NOT ALL SLEEP--BUT WE
SHALL ALL BE CHANGED.
730 DATA LUKE 6/38,GIVE-- AND I
T SHALL BE GIVEN TO YOU. GOOD
MEASURE--PRESSED DOWN-- SHAKE
N TOGETHER...FOR THE MEA- SURE
YOU GIVE WILL BE THE MEA- SURE
YOU GET BACK.
740 DATA ACTS 2/38,REPENT AND B
E BAPTIZED--EVERY ONE OF YOU I
N THE NAME OF JESUS CHRIST FOR T
HE FORGIVENESS OF YOUR SINS--
-AND YOU SHALL RECEIVE THE GIFT
OF THE HOLY SPIRIT.
750 DATA EXODUS 31/13,...MY SA
BBATHS YOU SHALL KEEP--FOR IT IS
A SIGN BETWEEN ME AND YOU TH

ROUGHOUT YOUR GENERATIONS-- TH
AT YOU MAY KNOW THAT I AM THE LO
RD THAT SANCTIFIES YOU.
760 DATA I TIMOTHY 6/10,FOR THE
LOVE OF MONEY IS THE ROOT OF
ALL EVIL...
770 DATA MATTHEW 5/48,BE YOU TH
EREFORE PERFECT--EVEN AS YOUR FA
THER WHICH IS IN HEAVEN IS PE
RFECT.
780 DATA PROVERBS 14/12 & 16/25,
THERE IS A WAY WHICH SEEMS RIG
HT UNTO A MAN--BUT THE END THERE
OF ARE THE WAYS OF DEATH.
790 DATA REVELATION 3/10,BE-
CAUSE YOU HAVE KEPT THE WORD OF
MY PATIENCE--I ALSO WILL KEEP
YOU FROM THE HOUR OF TEMPTATION
WHICH SHALL COME UPON ALL THE
WORLD...
800 DATA MATTHEW 6/24,NO MAN CA
N SERVE TWO MASTERS--FOR EI
THER HE WILL HATE THE ONE AND LO
VE THE OTHER--ELSE HE WILL HO
LD TO THE ONE AND DESPISE THE OT
HER. YOU CANNOT SERVE GOD AN
D MAMMON.
810 DATA MATTHEW 28/19,GO YOU T
HEREFORE AND TEACH ALL NA- T
IONS--BAPTIZING THEM IN THE N
AME OF THE FATHER AND OF THE S
ON AND OF THE HOLY SPIRIT.
820 DATA JEREMIAH 10/3,FOR THE C
USTOMS OF THE PEOPLE ARE V
AIN--FOR ONE CUTS A TREE OUT O
F THE FOREST--THE WORK OF THE H
ANDS OF THE WORKMAN WITH THE A
XE.
830 DATA JEREMIAH 10/4,THEY D
ECK IT WITH SILVER AND GOLD-- A
ND FASTEN IT WITH NAILS AND W
ITH HAMMERS--THAT IT MOVE NOT.
840 DATA LUKE 21/36,WATCH YOU
THEREFORE AND PRAY ALWAYS-- THAT
YOU MAY BE ACCOUNTED WOR- THY
TO ESCAPE ALL THESE THINGS THAT
SHALL COME TO PASS--AND TO STAN
D BEFORE THE SON OF MAN.
850 DATA ACTS 3/19,REPENT YOU T
HEREFORE--AND BE CONVER- TED--
THAT YOUR SINS MAY BE BLOTT
ED OUT--WHEN THE TIMES OF RESTI
TUTION SHALL COME FROM THE PRESE
NCE OF THE LORD.
860 DATA JOHN 8/32,AND YOU SHALL
KNOW THE TRUTH--AND THE TRUTH
SHALL MAKE YOU FREE.
870 DATA JOHN 6/33,THESE THING
S I HAVE SPOKEN UNTO YOU-- THAT
IN ME YOU MIGHT HAVE PEACE
. IN THE WORLD YOU SHALL HAVE
TRIBULATION--BUT BE OF GOOD
CHEER--I HAVE OVERCOME THE WORLD
.
880 DATA REVELATION 5/10,AND
HAVE MADE US UNTO OUR GOD KINGS
AND PRIESTS--AND WE SHALL REIGN
ON THE EARTH.
890 DATA ROMANS 1/17,FOR THE
REIN IS THE RIGHTEOUSNESS OF GOD
REVEALED FROM FAITH TO FAI
TH--AS IT IS WRITTEN--THE JUS
T SHALL LIVE BY FAITH.
900 DATA PSALMS 133/1,BE- HO
LD--HOW GOOD AND HOW PLEASANT IT
IS FOR BRETHREN TO DWELL TO- GE

TH IN UNITY.
910 DATA JOB 42/5-6,I HAVE HEAR
D OF YOU BY THE HEARING OF THE
EAR--BUT NOW MINE EYE SEES YOU.
WHEREFORE I ABHOR MYSELF-- AND
REPENT IN DUST AND ASHES.
920 DATA MATTHEW 5/3,BLESSED ARE
THE POOR IN SPIRIT--FOR THE
IRS IS THE KINGDOM OF HEA- VEN
.
930 DATA II CORINTHIANS 11/14,AN
D NO MARVEL--FOR SATAN HIMSELF
IS TRANSFORMED INTO AN ANGEL
OF LIGHT.
940 '***** RANDOM QUIZ *****
950 N=RND(106)
960 T=T+1
970 IF INT(N/2)=N/2 THEN N=N-1
980 FOR X=1 TO N
990 READ A\$
1000 NEXT X
1010 READ B\$
1020 SC=RND(6)
1030 IF SC=1 THEN CLS0
1040 IF SC=2 THEN CLS2
1050 IF SC=3 THEN CLS3
1060 IF SC=4 THEN CLS4
1070 IF SC=5 THEN CLS6
1080 IF SC=6 THEN CLS8
1090 IF SC=6 THEN CLS6:IF SC=6 THE
N CLS8
1100 SOUND 167,5
1110 GOSUB 1500
1120 PRINT@32," WHAT SCRIPTURE S
TATES: "B\$
1130 IF G\$="ORDER" THEN 1150
1140 RESTORE
1150 GOSUB 1710
1160 INPUT R\$
1170 IF R\$=A\$ THEN 1320
1180 PRINT@320," wrong! THE COR
RECT SCRIPTURE IS: ";A\$
1190 SOUND 70,5:FOR D=1 TO 1000:NE
XT
1200 IF T=QN THEN FOR D=1 TO 3000:
NEXT:GOTO 2370
1210 PRINT@416," PRESS enter F
OR ANOTHER BIBLE SC
RIPTURE ";
1220 INPUT D\$
1230 IF G\$="ORDER" THEN NEXT N:GO
TO 1920
1240 GOTO 950
1250 C=C+1
1260 Y=RND(9)-1:CLS(Y)
1270 IF Y=5 THEN 1260
1280 IF T=QN THEN FOR D=1 TO 400:N
EXT:GOTO 2370
1290 IF G\$="ORDER" THEN 1920
1300 IF G\$="RANDOM" THEN 950
1310 FOR D=1 TO 500:NEXT
1320 CLS0:FOR D=1 TO 200:NEXT:CLS5
:FOR D=1 TO 15:NEXT:CLS0:FOR D=1 TO
200:NEXT
1330 CLS(RND(9))-1
1340 SOUND140,1:SOUND165,1:SOUND
180,1:SOUND200,1:SOUND213,1:SOUN
D221,4
1350 XS=RND(143)
1360 IF XS<129 THEN 1350
1370 SZ=RND(7)*16
1380 FOR H=192 TO 286 STEP 2:PRINT@H
,CHR\$(XS+XZ);:NEXT
1390 RD=RND(143)

continued on 15

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- M1 - 8 Utilities & 8 Songs
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TELECOMMUNICATIONS 1-3

- T1 - Haysae, Kermit, Mterm
- T2 - Cobster Terminal Package
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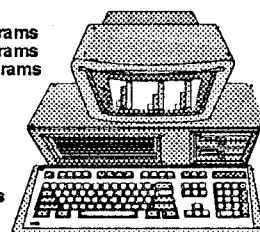


EDUCATION 1-4

- E1 - 12 Programs For Young Kids
- E2 - 12 Programs For High School Kids
- E3 - 11 Programs Teaching The Coco'S Commands
- E4 - 5 Graphics Programs About Australia

GRAPHICS 1-4

- GR1 - 12 Basic Graphic Programs
- GR2 - 12 Basic Graphic Programs
- GR3 - 9 Coco 3 Graphic Programs
- GR4 - 22 Coco Max Pictures
- GR5 - 22 Coco Max Pictures
- GR6 - 22 Coco Max Pictures
- GR7 - 15 Coco Max Pictures
- GR8 - 22 .Bin Pictures
- GR9 - 22 .Bin Pictures
- GR10 - 14 Large .Bin Pictures
- GR11 - 8 Mge Pictures
- GR12 - Coco Max 3 Pictures
- GR13 - Macpaint Graphic Editor
- GR14 - 5 Macintosh Pictures



HOME MANAGEMENT 1-4

• 12 Programs Each Disk/Tape •

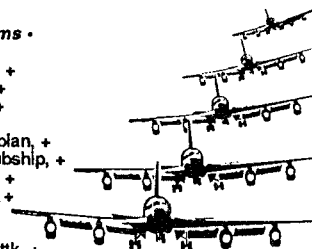
- H1 - Checkbook, Database, Word Processor, +
- H2 - Cash Journal, Investments, Mail List, +
- H3 - Finance, Int. Rates, Stocks, +
- H4 - Spelling Fix, Spelling Checker, +



GAMES 1-11

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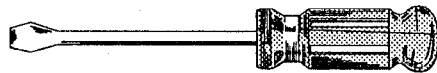
- GA1 - 3Dticac, Missile, Poker, Tycoon, +
- GA2 - Chess, Motojump, Rider, Slots, +
- GA3 - Battleship, Golf, Lander, Robots, +
- GA4 - Abm, Cartel, Subchase, Trek, +
- GA5 - Blackjack, Laser, Raceway, Utopian, +
- GA6 - Kings, Navyguns, Poolgame, Subship, +
- GA7 - Connect4, F-16, Life, Mazeland, +
- GA8 - Chute, Football, Othello, Slither, +
- GA9 - Civilwar, Flight, Prix, Stock, +
- GA10 - Cave, Fly, Pedro, Scramble, +
- GA11 - Bunkers, Craps, Gunner, Nukeattk, +



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- U1 - Backup35, Diskzap, Romcopy, Timer, +
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- U3 - Diskaid, Disklib, Midata, Playmac, +
- U4 - Macpix, Stat-Log, Unarc, Unmaster, +
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M2	GR2	E2	U2	GA2
M3	GR3	E3	U3	GA3
M4	GR4	E4	U4	GA4
M5	GR5		U5	GA5
M6	GR6	H1	U6	GA6
M7	GR7	H2	U7	GA7
	GR8	H3	U8	GA8
	GR9	H4		GA9
A1	GR10			GA10
A2	GR11			GA11
T1	GR12			
T2	GR13			
T3	GR14			

PLEASE CIRCLE

TAPE DISK

continued from 13

```

1400 IF RD<128THEN1390
1410 XD=RND(7)*16
1420 FOR H=193TO287STEP2:PRINT@H
,CHR$(RD+XD);:NEXT
1430 FOR D=1TO300:NEXT:PRINT@235
," CORRECT! ";
1440 SOUND200,5:FOR D=1TO200:NEX
T
1450 FOR D=1TO600:NEXT
1460 GOTO 1250
1470 SOUND176,3:FOR D=1TO150:NEX
T
1480 SOUND193,4:SOUND147,7
1490 FOR D=1TO500:NEXT:RETURN
1500 X=RND(18)
1510 IF X=1THEN FOR H=0TO31:PRIN
T@H,CHR$(130+16);:NEXT
1520 IF X=2THEN FOR H=0TO31:PRIN
T@H,CHR$(130+32);:NEXT
1530 IF X=3THEN FOR H=0TO31:PRIN
T@H,CHR$(131+32);:NEXT
1540 IF X=4THEN FOR H=0TO31:PRIN
T@H,CHR$(131+64);:NEXT
1550 IF X=5THEN FOR H=0TO31:PRIN
T@H,CHR$(132+80);:NEXT
1560 IF X=6THEN FOR H=0TO31:PRIN
T@H,CHR$(133+80);:NEXT
1570 IF X=7THEN FOR H=0TO31:PRIN
T@H,CHR$(133+64);:NEXT
1580 IF X=8THEN FOR H=0TO31:PRIN
T@H,CHR$(134+16);:NEXT
1590 IF X=9THEN FOR H=0TO31:PRIN
T@H,CHR$(135+32);:NEXT
1600 IF X=10THEN FOR H=0TO31:PRI
NT@H,CHR$(136+16);:NEXT
1610 IF X=11THEN FOR H=0TO31:PRI
NT@H,CHR$(139+16);:NEXT
1620 IF X=12THEN FOR H=0TO31:PRI
NT@H,CHR$(140+16);:NEXT
1630 IF X=13THEN FOR H=0TO31:PRI
NT@H,CHR$(140+64);:NEXT
1640 IF X=14THEN FOR H=0TO31:PRI
NT@H,CHR$(140+80);:NEXT
1650 IF X=15THEN FOR H=0TO31:PRI
NT@H,CHR$(131+16);:NEXT
1660 IF X=16THEN FOR H=0TO31:PRI
NT@H,CHR$(131+80);:NEXT
1670 IF X=17THEN FOR H=0TO31:PRI
NT@H,CHR$(131+96);:NEXT
1680 IF X=18THEN FOR H=0TO31:PRI
NT@H,CHR$(137+80);:NEXT
1690 IF IO$="IN ORDER"THEN 1120
1700 RETURN
1710 FOR H=0TO31:IF X=1THEN PRIN
T CHR$(136+16);:NEXT
1720 FOR H=0TO31:IF X=2THEN PRIN
T CHR$(136+32);:NEXT
1730 FOR H=0TO31:IF X=3THEN PRIN
T CHR$(140+32);:NEXT
1740 FOR H=0TO31:IF X=4THEN PRIN
T CHR$(140+64);:NEXT
1750 FOR H=0TO31:IF X=5THEN PRIN
T CHR$(129+80);:NEXT
1760 FOR H=0TO31:IF X=6THEN PRIN
T CHR$(133+80);:NEXT
1770 FOR H=0TO31:IF X=7THEN PRIN
T CHR$(133+64);:NEXT
1780 FOR H=0TO31:IF X=8THEN PRIN
T CHR$(134+16);:NEXT
1790 FOR H=0TO31:IF X=9THEN PRIN
T CHR$(141+32);:NEXT
1800 FOR H=0TO31:IF X=10THEN PRI
NT CHR$(130+16);:NEXT
1810 FOR H=0TO31:IF X=11THEN PRI
NT CHR$(142+16);:NEXT
1820 FOR H=0TO31:IF X=12THEN PRI
NT CHR$(131+16);:NEXT
1830 FOR H=0TO31:IF X=13THEN PRI
NT CHR$(131+64);:NEXT
1840 FOR H=0TO31:IF X=14THEN PRI
NT CHR$(131+80);:NEXT
1850 FOR H=0TO31:IF X=15THEN PRI
NT CHR$(140+16);:NEXT
1860 FOR H=0TO31:IF X=16THEN PRI
NT CHR$(140+80);:NEXT
1870 FOR H=0TO31:IF X=17THEN PRI
NT CHR$(140+96);:NEXT
1880 FOR H=0TO31:IF X=18THEN PRI
NT CHR$(137+80);:NEXT
1890 IF IO$="IN ORDER"THEN 1160
1900 IF IO$<>"IN ORDER"THEN RETU
RN
1910 '***** ORDER QUIZ *****
1920 FOR N=1TO53
1930 T=T+1
1940 IF T>QN THEN RESTORE: GOTO
2950
1950 READ A$
1960 READ B$
1970 GOTO 1020
1980 CLS(RND(9))-1
1990 X=RND(3)
2000 IF X=1THEN2030
2010 IF X=2THEN2070
2020 IF X=3THEN2110
2030 Z=RND(7)*16
2040 FOR H=96TO127:PRINT@H,CHR$(
131+Z);:NEXT:FOR H=352TO383:PRIN
T@H,CHR$(131+Z);:NEXT
2050 FOR H=128TO159:PRINT@H,CHR$(
140+Z);:NEXT:FOR H=384TO415:PRI
NT@H,CHR$(140+Z);:NEXT
2060 GOTO 2140
2070 B=RND(7)*16
2080 FOR H=96TO127:PRINT@H,CHR$(
140+B);:NEXT:FOR H=352TO383:PRIN
T@H,CHR$(140+B);:NEXT
2090 FOR H=128TO159:PRINT@H,CHR$(
131+B);:NEXT:FOR H=384TO415:PRI
NT@H,CHR$(131+B);:NEXT
2100 GOTO 2140
2110 RB=RND(7)*16
2120 FOR H=96TO127:PRINT@H,CHR$(
138+RB);:NEXT:FOR H=352TO383:PRI
NT@H,CHR$(138+RB);:NEXT
2130 FOR H=128TO159:PRINT@H,CHR$(
133+RB);:NEXT:FOR H=384TO415:PR
INT@H,CHR$(133+RB);:NEXT
2140 PRINT@192," WOULD YOU LIK
E TO REVIEW SOME MORE S
CRIPTURES? ";
2150 SOUND 170,6
2160 PRINT@288," TYPE yes OR n
o: ";
2170 INPUT I$
2180 T=0:C=0
2190 IF I$="YES"THEN RESTORE:GOT
O 240
2200 IF I$="NO"THEN2300
2210 IF I$<>"YES" OR I$<>"NO"THE
N GOSUB 2230
2220 GOTO 2160
2230 OX=RND(7)*16
2240 FOR H=311TO319:PRINT@H,CHR$(
143+OX);:NEXT
2250 SOUND33,6:GOTO 2160
2260 IF L=3THEN SOUND 25,5:FOR H
=288TO319:PRINT@H,CHR$(143+32);
:NEXT
2270 IF L=4THEN SOUND 30,6:FOR H
=288TO319:PRINT@H,CHR$(143+64);:
NEXT
2280 IF L=5THEN SOUND 40,6:FOR H
=288TO319:PRINT@H,CHR$(143+80);:
NEXT
2290 RETURN
2300 SOUND 40,4:CLS2:FOR D=1TO20
:NEXT:CLS0:FOR D=1TO400:NEXT
2310 EP=EP+1:IF EP=5THEN 2330
2320 GOTO 2300
2330 CLS0:FOR D=1TO600:NEXT
2340 PRINT@236,"the";:PRINT@239,
CHR$(128);:PRINT@240,"end";
2350 FOR D=1TO5000:NEXT:CLS0:FOR
D=1TO5000:NEXT
2360 END
2370 X=RND(9)-1:IF X=2 OR X=5 TH
EN 2370
2380 '***** SCORING *****
2390 CLS(X)
2400 Y=RND(7)*16:FOR H=64TO95:PR
INT@H,CHR$(140+Y);:NEXT:FOR H=16
0TO191:PRINT@H,CHR$(131+Y);:NEXT
2410 PRINT@96," YOUR SCORE IS"
C "OUT OF" T " ";
2420 PRINT@128," CORRECT
ANSWERS ";
2430 SOUND170,2:SOUND189,2:SOUND
200,5
2440 FOR D=1TO1000:NEXT
2450 Z=RND(7)*16:FOR H=288TO319:
PRINT@H,CHR$(140+Z);:NEXT:FOR H=
352TO383:PRINT@H,CHR$(131+Z);:NE
XT
2460 GOTO 2950
2470 FOR D=1TO10000:NEXT
2480 FOR S=1TO3:CLS(RND(8)):FOR
D=1TO15:NEXT:CLS0:FOR D=1TO15:NE
XT:SOUND 237,1:FOR D=1TO300:NEXT
:NEXT S
2490 T=0:C=0
2500 X=RND(9)-1
2510 IF X=5THEN2500
2520 Y=RND(7)*16
2530 CLS(X):FOR H=0TO30STEP2:PRI
NT@H,CHR$(134+Y);:NEXT:FOR H=1TO
31STEP2:PRINT@H,CHR$(137+Y);:NEX
T
2540 FOR H=160TO190STEP2:PRINT@H
,CHR$(134+Y);:NEXT:FOR H=161TO19
1STEP2:PRINT@H,CHR$(137+Y);:NEXT
2550 PRINT@32,"YOUR NAME, PLEASE
";:SOUND108,2:SOUND140,2:SOUND15
9,2:SOUND185,2
2560 SOUND159,2:SOUND140,2:SOUND
108,4
2570 INPUT NM$
2580 PRINT@96,"HOW MANY QUESTION
S WOULD YOU LIKE, "NM$";
2590 SOUND125,2:SOUND153,2:SOUND
170,2:SOUND193,2:SOUND170,2:SOUN
D153,2:SOUND125,4
2600 INPUT QN:IF QN=>1 AND QN<54
THEN 2630
2610 IF QN<1 OR QN>53 THEN PRINT
@192,"NO MORE THAN 53,"NM$"!";
2620 SOUND 25,5:Y=RND(7)*16:FOR
H=134TO159:PRINT@H,CHR$(143+Y);:
NEXT:GOTO 2580
2630 SOUND133,2:SOUND159,2:SOUND
176,2:SOUND165,2:SOUND176,2:SOUN
D193,2:SOUND197,4
2640 RZ=RND(7)*16
2650 NS=RND(143)

```

continued on 16

CoCo Clipboard Magazine

continued from 15

```
2660 IF NS<128THEN2650
2670 FOR H=192TO223:PRINT@H,CHR$(NS+RZ);:NEXT
2680 PRINT@288," CHECK YOUR ANSWERS FOR CORRECT SPELLING BEFORE YOU ENTER THEM, ";NM$
2690 FOR D=1TO600:NEXT
2700 '***** OPENING INST. *****
2710 SOUND218,1:SOUND210,1:SOUND197,1:SOUND193,1:SOUND176,1:SOUND159,1:SOUND133,4
2720 FOR D=1TO1000:NEXT
2730 FOR S=1TO4:SOUND170,2:SOUND189,1:SOUND200,1:NEXT S
2740 FOR D=1TO50:NEXT:SOUND200,5
2750 PRINT@448," PRESS ANY KEY TO CONTINUE! ";
2760 A$=INKEY$:IF A$=""THEN 2760
2770 NR=NR+1:IF NR>2THEN 2940
2780 X=RND(9)-1
2790 IF X=2 OR X=5 THEN 2780
2800 CLS(X)
2810 PRINT@64,"TYPE YOUR SCRIPTURES LIKE THIS: ";SOUND225,6
2820 FOR D=1TO1000:NEXT
2830 PRINT@160," EXAMPLE: II TIMOTHY 3/15 ";
2840 FOR D=1TO1500:NEXT:SOUND200,5
2850 PRINT@238," OR ";
2860 PRINT@288," EXAMPLE: LUKE 9/12-24 ";
2870 FOR D=1TO1500:NEXT
2880 Z=RND(7)*16
2890 FOR D=1TO1000:NEXT
2900 SOUND170,5:FOR D=1TO50:NEXT:SOUND153,5
2910 FOR D=1TO50:NEXT:SOUND125,2:SOUND153,2:SOUND170,2:SOUND207,2:SOUND193,4
2920 PRINT@416," PRESS ANY KEY TO CONTINUE! ";
2930 K$=INKEY$:IF K$=""THEN2930
2940 RETURN
2950 PRINT@320," YOUR GRADE IS";INT(C/T*100) "% ";
2960 SOUND99,4:SOUND133,4:SOUND153,4:SOUND170,8
2970 FOR D=1TO2000:NEXT
2980 IF INT(C/T*100)=<79 THEN 3000
2990 IF INT(C/T*100)>79 THEN 3140
3000 X=RND(9)-1
3010 IF X=2 OR X=5THEN3000
3020 CLS(X)
3030 PRINT@128," TRY TO IMPROVE, ";NM$"! ";
3040 SOUND32,6:SOUND108,3:SOUND78,6
3050 FOR D=1TO2000:NEXT
3060 SOUND125,2:SOUND147,2:SOUND165,2:SOUND180,2:SOUND193,5
3070 FOR D=1TO300:NEXT
3080 SOUND108,2:SOUND140,2:SOUND159,2:SOUND176,2:SOUND185,5
3090 FOR D=1TO300:NEXT:PRINT@320," PRACTICE MAKES PERFECT! ";
3100 SOUND176,4:SOUND159,4:SOUND210,4:SOUND200,4:SOUND204,8
3110 FOR D=1TO600:NEXT
3120 CLS0:FOR D=1TO300:NEXT:CLS2
```

```
:FOR D=1TO15:NEXT:CLS0:FOR D=1TO200:NEXT
3130 GOTO 1980
3140 CLS(RND(9))-1
3150 PRINT@224," VERY GOOD WORK!! ";
3160 FOR H=224TO255:PRINT@H,CHR$(128);:NEXT
3170 SOUND237,1
3180 AM=AM+1:IF AM=7THEN 3200
3190 GOTO 3140
3200 PRINT@224," VERY GOOD WORK!! ";
3210 AM=0
3220 FOR D=1TO1000:NEXT
3230 CLS0:FOR X=1TO25
3240 F=INT(RND(0)*8)+1
3250 IF F=2 OR F=5 THEN 3240
3260 SET(RND(64)-1,RND(30)+1,F)
3270 FOR D=1TO100:NEXT:NEXT X
3280 FOR D=1TO500:NEXT
3290 FOR H=0TO63:FOR V=0TO31
3300 SET(5,10,5):SET(54,8,2):SET(8,27,5):SET(52,25,2)
3310 RESET (5,10):RESET(54,8):RESET(8,27):RESET(52,25)
3320 AE=AE+1:IF AE=60THEN 3340
3330 GOTO 3300
3340 FOR D=1TO800:NEXT
3350 FOR H=0TO63:FOR V=0TO31
3360 SET(31,15,5):FOR D=1TO100:NEXT
3370 SET(27,15,5):SET(35,15,5):SET(31,12,5):SET(31,18,5)
3380 SET(23,15,5):SET(39,15,5):SET(31,9,5)
3390 SET(31,21,5):SET(19,15,5):SET(43,15,5)
3400 SET(27,12,5):SET(35,12,5):SET(27,18,5):SET(35,18,5)
3410 SET(31,6,2):SET(31,24,2):SET(15,15,2):SET(47,15,2)
3420 FOR D=1TO150:NEXT
3430 SET(23,12,2):SET(39,12,2):SET(23,18,2):SET(39,18,2)
3440 SET(31,3,2):SET(31,27,2):SET(7,15,2):SET(11,15,2)
3450 SET(51,15,2):SET(55,15,2)
3460 SET(27,9,2):SET(35,9,2):SET(27,21,2):SET(35,21,2)
3470 SET(15,10,6):SET(55,12,7):SET(13,26,1):SET(49,25,8)
3480 RESET(15,10):RESET(55,12):RESET(13,26):RESET(39,25)
3490 PJ=PJ+1:IF PJ=8THEN3510
3500 CLS0:GOTO3350
3510 AE=0:PJ=0
3520 FOR D=1TO1000:NEXT
3530 FOR S=1TO15:CLS0:FOR D=1TO20:NEXT:CLS(RND(9))-1:FOR D=1TO15:NEXT:NEXT S
3540 SOUND 200,5:GOTO 1980
```

continued from 10

```
1810 GOSUB1460:A=0
1820 RETURN
1830 '
1840 '**** END OF PROGRAM ****
1850 '
1860 CLS:PRINT"ARE YOU SURE (Y/N)?"
1870 A$=INKEY$:IF A$=""THEN1870
1880 IF A$="N"OR A$="n" THEN 460
1890 IF A$="Y"OR A$="y"THEN 1910
1900 GOTO1870
1910 UNLOAD0:CLS:END
1920 PCLEAR1:RUN80
```

**CoCo
Clipboard
Magazine**

**CoCo
Clipboard
Magazine**

Print Formatter

Carl England

System Requirements: 64K Disk, Disk EDTASM

With PRINT FORMATTER you can select several options to customize your text files. Among those options are right justification, various column widths and automatic page numbering. All together there are six printer options available from the main menu that will allow you to customize any text file. But the real power of PRINT FORMATTER comes from its ability to process commands contained within text files. These include four of the options from the main menu. Plus there are also commands that allow you to center your text and add printer control codes.

Entering the Listing

Due to the size of this program, it will be necessary to use EDTASMOV to assemble it. This is the OVERLAY version of Disk EDTASM that will free up more RAM for program storage and symbol tables. Because EDTASMOV only loads parts of the assembler as needed, it will be necessary to have the Disk EDTASM disk in drive 0 while entering and assembling PRINT FORMATTER.

When the entire program is entered, assemble it to disk using the Wait on Errors switch:

A PRINTFMT /WE

If no errors are encountered, save the source file:

W PRINTFMT

Using PRINT FORMATTER

LOADM"PRINTFMT":EXEC

You will be presented with a menu screen with the following options:

```
> BAUD RATE      2400
  RIGHT JUSTIFY   YES
  NUMBER PAGES    YES
  PAGE WIDTH      005 075
  PAGE LENGTH     005 060 066
  CONTINUOUS
  PRINT FILE
```

Just to the left of BAUD RATE is the menu cursor (>). Move the cursor to each option with the arrow keys.

To select your printer baud rate, press the left or right arrow key until the correct rate is displayed. Supported baud rates are 300, 600, 1200, 2400, 4800 and 9600.

RIGHT JUSTIFICATION, when active, will add extra spaces as needed so that you get a straight right margin. Gives a document a professional look. Select with the left or right arrow.

NUMBER PAGES: When active, will automatically number all pages of the text file starting with page 001. Select with left or right arrow.

PAGE LENGTH: The first number is the left margin, the second is the right margin.

PAGE LENGTH: The first number is the top of the page (usually set to 001 if you are using single sheet paper). The second number is the last line that text is to be printed on. The third number is the total length of the paper, usually 066.

Select the number you wish to change with the arrow keys and then enter the new number. 255 is the maximum that can be entered into each field. If you make a mistake, exit and return to the field and re-enter the number. The number 000 should be avoided as PRINT FORMATTER will usually (but not always) interpret it as 255.

CONTINUOUS/SINGLE-SHEET: Use the left or right arrow key to toggle between CONTINUOUS (fan fold) or SINGLE-SHEET paper. If continuous is selected the paper will automatically advance to the next page; if single-sheet is selected, you will be prompted to insert another sheet of paper at the end of each page.

PRINT FILE: Insert the disk containing the file to be printed in drive 0 and press ENTER. You will be presented with a two column disk directory. Select a file to be

continued on 18

continued from 17

printed by moving the cursor (black rectangle) with the arrow keys and press ENTER. If the file you want to print is not on this disk, press BREAK and you will be returned to the main menu. ***NOTE*** If more than 32 files are contained on this disk, pressing SHIFT UP or SHIFT DOWN will change directory "pages". Once the file is loaded into RAM it will be printed; then you will be returned to the main menu.

To give this program compatibility with all Color Computers (64K minimum), I chose to use the RAM between addresses \$2000 and \$F800 for buffer space. This will allow any file up to 54K (24 granules) to be printed using this program. Longer files should be saved as two or more separate files. If the 54K boundary is exceeded, then any text beyond that point will be ignored.

Using Imbedded Commands

When creating a text file (or modifying an existing one), you can add several commands that will affect the way PRINT FORMATTER will process the text. Each command must immediately follow a carriage return (ENTER) to be processed. ANY space or

period that is the first character on a line will be processed as a command.

Commands:

SPACE: If right justification is off, then an extra space is added to the beginning of a line. If right justification is active then a new paragraph will be started and indented two spaces.

.C;text: The .C; command will center any .c;text: text that follows the semicolon until a carriage return is encountered. If the text cannot be centered between the left and right margins, the command will be ignored.

.D27;BE: This is the data command. To use .d0E it, enter one or more two digit hex characters to be sent to the printer. Separate each code with a semicolon. This will allow you to use ANY printer control code regardless of what type printer you are using. For example, if I want to switch my printer to double width, I would use ".D1B;0E". To send a

continued on 19



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line feed to my printer I would use ".d0A". (Because each data byte takes up a byte in the printer buffer, this may affect line lengths and centering.)

.P: This is the PAGE command. If using .p single-sheet paper, you .p will be prompted to insert another sheet. Otherwise, the paper will automatically advance. This command allows you to start another page before the current page is full.

.F: This is the FILL or RIGHT JUSTIFY .f command. When FILL is .f active all lines will be the same length. Words may be taken from the next line or spaces may be added to create an even right margin.

.NF: This is the NO FILL command. It is .nf useful when you want the .nf text to be printed exactly as entered.

.N: The NUMBER command will turn on page .nl2 numbering. If it is .nl2 followed by a number then page numbering will start at that number. If no number is specified then page numbering will start at 001.

.S: SKIP command. If FILL is inactive, .sl2 then printer will skip .sl2 specified number of lines. If FILL is active, then the print buffer will be output and printer will advance specified number of lines minus 1. If a number is not specified, then the number equals 1.

.W5;75: WIDTH command. Sets left and .w10 right margins. Either or both .W;60 .w10 may be specified. Right margin must be preceded by a semi colon. Left margin must be greater than 0 and right margin must be greater than left.

.L5;60;66 LENGTH command. Sets top, .l2 bottom and total length of .L;55 page. .l2 Any or all may be .l;70 specified. Bottom must be preceded by .L;55 a semicolon; total must be preceded by two semicolons. .l;70 Top must be greater than zero. Bottom must be greater than .L;62;68 top. Total must be equal to or greater than bottom.

Program Documentation:

Lines 110 thru 690 Print the main menu.

Lines 700 thru 760 Perform the same function as the BASIC CLS.

Lines 770 thru 810 Print to the current device any text pointed to by U register. Terminates when an ASCII 0 is encountered.

Lines 820 thru 1030 Print a 3 digit number to the current device. If the device is the screen, then register X points to the screen location.

Lines 1040 thru 2690 This is the routine that gets your input from the main menu.

Lines 2700 thru 4070 Display the directory and allows you to select a file. (Nice general purpose routine used in several of my programs.)

Lines 4280 thru 4520 The program starts here. Initialize all variables and calls all routines.

Lines 4530 thru 4970 Load the file into RAM addresses \$2000 thru \$F7FF. Banks between ROM and RAM.

Lines 4980 thru 5920 File is tested for imbedded commands. If right justification is active, lines are compressed and expanded to exactly fill the print buffer.

Lines 5930 thru 6530 Print the page number (if active). Print text buffer. Test for bottom of page.

Lines 6540 thru 6600 SPACE COMMAND. If fill is active, new line is started--indent two spaces.

Lines 6610 thru 7050 CENTER COMMAND. Centers text following semi- colon.

Lines 7060 thru 7500 DATA COMMAND. Converts two-character hex codes to single byte ASCII characters.

Lines 7510 thru 7830 PAGE COMMAND. Starts new page.

Lines 7840 thru 7880 FILL COMMAND. Activates right justification.

Lines 7890 thru 8000 & 8010 thru 8090 NUMBER COMMAND. If no value is specified, then page number equals 001 else page number equals value.

Lines 7890 thru 7960 & 8010 thru 8030 NO FILL COMMAND. Deactivates right justification.

Lines 8100 thru 8330 Evaluate a number. (Numbers greater than 255 give unpredictable results.)

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Lines 8340 thru 8370 Tests to see if print buffer is empty. If it isn't then it is printed.

Lines 8380 thru 8520 SKIP COMMAND. Skips n lines. If n not specified then n=1. If FILL is active then new line is started and n=n-1.

Lines 8380 thru 8860 WIDTH COMMAND. Selects left and right margins.

Lines 8870 thru 9200 LENGTH COMMAND. Selects top and bottom of page and total page length.

Line 9210 End of command chain. Each command tests to determine if it is the command being called. If it is not, then it passes control on to the next command in the chain. If control is passed to this line, then the command is invalid and will be ignored. Because commands are chained, additional commands could be added added at this point without changing any other part of the program.

Lines 9220 thru 9420 &
9520 thru 9590 &
9720 thru 9830 &
9960 thru 9900 &
10020 thru 10050 &
10800 thru 10830 Data to be printed on the text screen at various times

Lines 9430 thru 9510 Initial default values for PRINT FORMATTER:

BAUD	0= 300	FILL	0=YES
	1= 600		255=NO
	2=1200	NUMBER	0=NO
	3=2400		1=YES
	4=4800	SHEET	0=CONTINUOUS
	5=9600		255=SINGLE-SHEET

Lines 9600 thru 9650 Delay values for baud rate.

Lines 9660 thru 9710 &
9840 thru 9950 &
10650 thru 10140 &
10790 System variables and pointers.

Lines 10160 thru 10780 Random table used to determine where spaces should be inserted when FILL is active. (I used BASIC to generate the values for this table.)

Line 10840 Just there to let me know how long the program is when it is assembled._

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DELUXE ICON EDITOR

"A Must For Multi-Vue" wrote Barry Pottinger in his Feb. 1989 Rainbow Review. 100% machine language, #12K CoCo3 required. Allows complete creation and revision of Multi-Vue's application and icon bit map files. A bargain at \$10.95.

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continued from 20			1210	CMPA	#10	02350	STB	U	03490	CMPA	#9
00100	ORG	\$E00	1220	LBEQ	CURDOWN	02360	JSR	NUMOUT	03500	BEQ	MENU5
00110 M	JSR	CLH	1230	CMPA	#8	02370	PULS	X	03510	CMPA	#95
00120	LDU	#MENU	01240	BNE	BA1	02380	BRA	NSO	03520	BEQ	MENU7
00130	JSR	PRINT	01250	DEC	BAUD	02390	PULS	X	03530	CMPA	#91
00140 M1	LDL	BAUD	01260	BPL	SE	02400	LDB	#96	03540	BEQ	MENU8
00150	LDX	#BTAB1	01270	LDA	#5	02410	STB	,X	03550	CMPA	#3
00160	LDB	A,X	01280	BRA	BA2	02420	RTS	[\$A000]	03560	BNE	MENU11
00170	STB	150	01290	CMPA	#9	02430	JSR	#94	03570	PULS	D
00180	LDX	#BTAB2	01300	BNE	BA	02440	CMPA	CURUP	03580	CMPA	START
00190	LSLA		01310	LDA	BAUD	02450	BEQ	#10	03590	MENU11	#13
00200	LDU	A,X	01320	INCA		02460	CMPA	CURDOWN	03600	BNE	MENUX
00210	LDX	#\$4F4	01330	CMPA	#6	02470	BEQ	#8	03610	RTS	
00220	STX	\$88	01340	BNE	BA2	02480	CMPA	SS	03620	BSR	MENU6
00230	BSR	PRINT	01350	CLRA		02490	BLT	SS	03630	CMPU	#\$410
00240	LDA	FILL	01360	STA	BAUD	02500	CMPA	#9	03640	BLE	MENUX
00250	BEQ	FILYES	01370	BRA	SE	02510	BGT	SS	03650	LEAU	-32,U
00260	LDU	#NOTXT	01380	JSR	[\$A000]	02520	COM	SHEET	03660	LEAX	-32,X
00270	BRA	JPRNT	01390	CMPA	#94	02530	JMP	SE	03670	BRA	MENUX
00280	LDU	#YESTXT	01400	LBEQ	CURUP	02540	DEC	CURSOR	03680	BSR	MENU6
00290	LDX	#\$514	01410	CMPA	#10	02550	BRA	ERASE	03690	CMPU	#\$5E0
00300	STX	\$88	01420	LBEQ	CURDOWN	02560	INC	CURSOR	03700	BGE	MENUX
00310	BSR	PRINT	01430	CMPA	#8	02570	LDA	#96	03710	TFR	X,D
00320	LDA	NUMBER	01440	BLT	JU	02580	STA	\$54E	03720	ADDD	#32
00330	BEQ	NUMNO	01450	CMPA	#9	02590	STA	\$553	03730	CMPD	DIREND
00340	LDU	#YESTXT	01460	BGT	JU	02600	STA	\$56E	03740	BGE	MENUX
00350	BRA	NPRNT	01470	COM	FTLL	02610	STA	\$573	03750	LEAU	32,U
00360	LDU	#NOTXT	01480	BRA	SE	02620	STA	\$578	03760	TFR	D,X
00370	LDX	#\$534	01490	JSR	[\$A000]	02630	JMP	SE	03770	BRA	MENUX
00380	STX	\$88	01500	CMPA	#94	02640	JSR	[\$A000]	03780	BSR	MENU6
00390	BSR	PRINT	01510	LBEQ	CURUP	02650	CMPA	#94	03790	CMPU	#\$400
00400	LDU	#LEFT	01520	CMPA	#10	02660	BEQ	CURUP	03800	BEQ	MENUX
00410	LDA	U+	01530	LBEQ	CURDOWN	02670	CMPA	#13	03810	LEAU	-16,U
00420	LDX	#\$54F	01540	CMPA	#8	02680	BNE	FN	03820	LEAX	-16,X
00430	BSR	NUMOUT	01550	BLT	NP	02690	RTS	#\$1103	03830	BRA	MENUX
00440	LDA	U+	01560	CMPA	#9	02700	LDD	#DIRBUF	03840	BSR	MENU6
00450	BSR	NUMOUT	01570	BGT	NP	02710	LDU	DSKIN	03850	CMPU	#\$5F0
00460	LDA	U+	01580	LDA	NUMBER	02720	JSR	DIR1	03860	BEQ	MENUX
00470	BSR	NUMOUT	01590	BEQ	NX1	02730	DIR2	LDA	03870	TFR	X,D
00480	LDA	U+	01600	DECA		02740	BEQ	DIR4	03880	ADDD	#16
00490	BSR	NUMOUT	01610	BRA	NX2	02750	CMPA	#255	03890	CMPD	DIREND
00500	LDA	U+	01620	INCA		02760	BEQ	DIR6	03900	BGE	MENUX
00510	LDX	#\$574	01630	STA	NUMBER	02770	LDB	#16	03910	LEAU	16,U
00520	BSR	NUMOUT	01640	JMP	SE	02780	STA	U+	03920	TFR	D,X
00530	LDA	U+	01650	JSR	[\$A000]	02790	LDA	U+	03930	JMP	MENUX
00540	LDX	#\$579	01660	CMPA	#94	02800	DECB	DIR3	03940	LDB	#96
00550	BSR	NUMOUT	01670	LBEQ	CURUP	02810	BNE	DIR5	03950	STB	U
00560	LDA	U+	01680	LBEQ	CURDOWN	02820	BRA	DIR5	03960	RTS	
00570	BEQ	CONT	01690	LBEQ	CURDOWN	02830	LEAX	16,X	03970	LDA	PAGE
00580	LDU	#SINGLE	01700	CMPA	#9	02840	LEAX	15,X	03980	LBEQ	MENU1
00590	BRA	SHTPRT	01710	BNE	PW	02850	CMPX	#\$4FF	03990	DECA	
00600	LDU	#CONTUS	01720	LDU	#LEFT	02860	BLT	DIR2	04000	STA	PAGE
00610	LDX	#\$582	01730	BSR	#\$54E	02870	LDD	2,Y	04010	JMP	DIR7
00620	STX	\$88	01740	LDU	#RIGHT	02880	INCB		04020	LDD	PAGEAD
00630	BSR	PRINT	01750	LDX	#\$553	02890	CMPB	#19	04030	ADDD	#\$200
00640	LDB	RIGHT	01760	BSR	NS	02900	BNE	DIR1	04040	CMPD	DIREND
00650	SUBB	LEFT	01770	NS	PLF	02910	STU	DIREND	04050	LBGT	MENU1
00660	CLRA		01780	BRA	PLF	02920	CLR	PAGE	04060	INC	PAGE
00670	ADDD	#PRNTBF	01790	JSR	[\$A000]	02930	LDU	#DIRBUF	04070	JMP	DIR7
00680	STD	PBEND	01800	CMPA	#94	02940	CMPU	DIREND	04080	DSKIN	PSHS
00690	RTS		01810	LBEQ	CURUP	02950	BNE	DIR9	04090	DIR	#2
00700	LDX	#\$400	01820	CMPA	#10	02960	JSR	CLH	04100	LDB	SDRIVE
00710	STX	\$88	01830	LBEQ	CURDOWN	02970	LDU	#DIRMT	04110	LDY	\$C006
00720	LDA	#96	01840	CMPA	#9	02980	CLRA		04120	STD	D
00730	STA	X+	01850	BNE	PTP	02990	JSR	PRINT	04130	PULS	D
00740	CMPX	CLH1	01860	LDU	#TOP	03000	JSR	[\$A000]	04140	STD	2,Y
00750	BNE	CLH1	01870	LDX	#\$56E	03010	CMPA	#3	04150	LDX	#\$400
00760	RTS		01880	BSR	NS	03020	BNE	DIR8	04160	STX	4,Y
00770	LDA	U+	01890	CMPA	#8	03030	PULS	D	04170	JSR	[\$C004]
00780	BEQ	PRINT1	01900	BEQ	PTT	03040	JMP	START	04180	PSHS	X,U
00790	JSR	[\$A002]	01910	LDU	#BOTTOM	03050	LDB	PAGE	04190	LDA	6,Y
00800	BRA	PRINT	01920	LDX	#\$573	03060	DECB	DIR10	04200	BEQ	DISK4
00810	CLRB		01930	BSR	NS	03070	BMI	DIR11	04210	LDU	HERMSG
00820	CLRB		01940	CMPA	#8	03080	LEAU	\$200,U	04220	LDA	#13
00830	STX	\$88	01950	BEQ	PTP	03090	BRA	DIR10	04230	JSR	[\$A002]
00840	INCB		01960	LDU	#TOTAL	03100	STU	PAGEAD	04240	JSR	PRINT
00850	SUBA	#100	01970	LDX	#\$578	03110	CLH	CLH	04250	JSR	[\$A000]
00860	BCC	NM1	01980	BSR	NS	03120	LDX	\$88	04260	BEQ	DISK3
00870	ADDA	#100	01990	CMPA	#8	03130	LEAX	1,X	04270	PULS	X,U,PC
00880	BSR	DIGIT	02000	BEQ	PTB	03140	STX	\$88	04280	LDS	#\$1FF0
00890	CLRB		02010	BRA	PTP	03150	BSR	DIR14	04290	CLR	
00900	INCB		02020	CLR	NFLAG	03160	LDD	\$88	04300	CLR	LINCT
00910	SUBA	#10	02030	COM	X	03170	CMPO	#\$5F0	04310	LDA	NUMBER
00920	BPL	NM2	02040	PSHS	#126	03180	BGE	DIR16	04320	BEQ	STNO
00930	ADDA	#10	02050	LDA	X+	03190	LDD	#\$2003	04330	CLRA	
00940	BSR	DIGIT	02060	STA	[\$A000]	03200	JSR	[\$A002]	04340	INCA	
00950	CLRB		02070	JSR	#8	03210	DECB	DIR13	04350	STA	NUMBER
00960	INCB		02080	CMPA	#9	03220	BNE	DIR13	04360	JSR	M
00970	DECA		02090	BEQ	NSRET	03230	LEAU	5,U	04370	JSR	SE
00980	BPL	NM3	02100	CMPA	#9	03240	CMPU	DIREND	04380	JSR	DIR
00990	ADDB	#47	02110	BEQ	NSRET	03250	BLT	DIR12	04390	LDA	13,X
01000	PSHS	A	02120	CMPA	#94	03260	BRA	DIR16	04400	STA	GRAN
01010	TFR	B,A	02130	BNE	NS3	03270	LDB	#8	04410	LDD	14,X
01020	JSR	[\$A002]	02140	PULS	X,U	03280	BSR	DIR15	04420	STD	LAST
01030	PULS	A,PC	02150	BRA	CURUP	03290	LDA	#46	04430	LDD	#\$2000
01040	JSR	M1	02160	CMPA	#10	03300	JSR	[\$A002]	04440	STD	MABUFF
01050	LDA	CURSOR	02170	BNE	NS4	03310	LDB	#3	04450	LDD	#\$1102
01060	LDB	#32	02180	PULS	X,U	03320	LDA	U+	04460	BSR	DSKIN
01070	MUL		02190	BRA	CURDOWN	03330	JSR	[\$A002]	04470	LDU	#GATBUF
01080	ADDD	#\$4E0	02200	CMPA	#48	03340	DECB	DIR15	04480	LDB	#128
01090	TFR	D,X	02210	BLT	NS2	03350	BNE	DIR15	04490	LDA	X+
01100	LDA	#96	02220	CMPA	#57	03360	RTS		04500	STA	U+
01110	STA	-32,X	02230	BGT	NS2	03370	LDU	#\$400	04510	DECB	
01120	STA	32,X	02240	LDB	NFLAG	03380	LDX	PAGEAD	04520	BNE	GAT
01130	LDA	#126	02250	BEQ	NS5	03390	LDA	#126	04530	LDA	GRAN
01140	STA	X	02260	CLR	NFLAG	03400	STA	U	04540	LDB	#1
01150	LDX	#PTAB	02270	CLR	U	03410	JSR	[\$A000]	04550	LSRA	
01160	LDB	CURSOR	02280	LDB	#48	03420	BEQ	MENU1	04560	BCC	MAIN1
01170	LSLB		02290	SUBA	#10	03430	CMPA	#94	04570	LDB	#10
01180	ABX		02300	STA	U	03440	BEQ	MENU2	04580	MAIN1	#17
01190	JMP	[X]	02310	MUL	U	03450	CMPA	#8			
01200	BA	[\$A000]	02320	ADDB	U	03460	BEQ	MENU4			
			02330	TFR	B,A	03470					
			02340			03480					

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CoCo Clipboard Magazine

Published Bi-Monthly

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If you've been looking for a CoCo magazine that takes a No Nonsense approach to the Color Computer, then CoCo Clipboard Magazine is for you!

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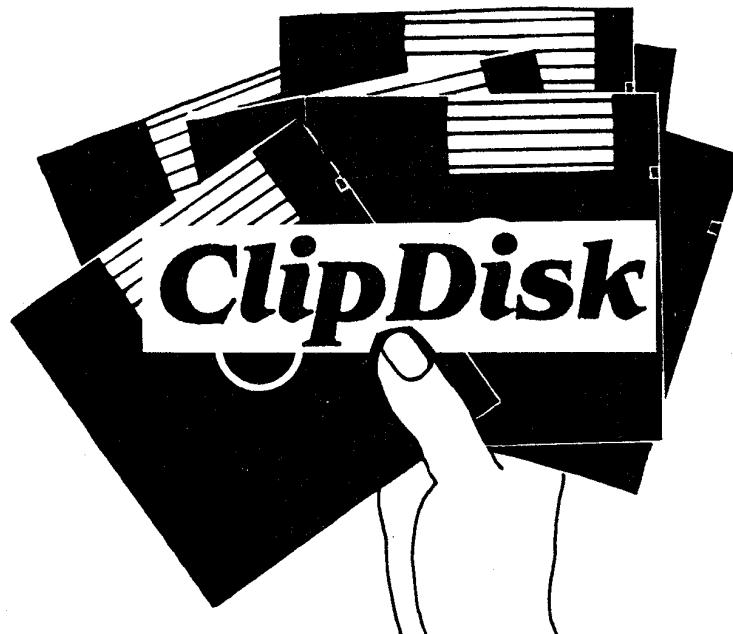
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04590		BLT	05710		LDB	RNDPTR	06840	CMPU	PBEND	07970	CMD50	CMPA
04600		INCA	05720		ANDB	#127	06850	BNE	CMD12	07980	BNE	CMD52
04610	MAIN2	LDU	05730		LDB	8,Y	06860	PULS	X	07990	LEAX	-1,X
04620	MAIN3	JSR	05740		CMPB	PBEND+1	06870	RTS		08000	BRA	CMD53
04630		CLRB	05750		BGE	FMT9	06880	LDA	RIGHT	08010	LDA	CMD54
04640		ORCC	05760		LDA	8,U	06890	SUBA	LEFT	08020	STA	FILL
04650		CLR	05770		CMPA	#32	06900	STB	TEMP	08030	JMP	BUFOUT
04660	MAIN4	LDA	05780		BNE	FMT9	06910	SUBA	TEMP	08040	BSR	TEMP
04670		STA	05790		CLRA		06920	LSRA		08050	LDA	TEMP
04680		DECB	05800		ADDD	#PRNTBF	06930	PULS	U	08060	BNE	CMD54
04690		BNE	05810		STD	PBEND	06940	LDU	PBEND	08070	INCA	
04700		CLR	05820		STD	TEMP	06950	LDR	-U	08080	STA	NUMBER
04710		ANDCC	05830	FMT10	LDA	-U	06960	STB	1,U	08090	RTS	
04720		LDD	05840		STA	1,U	06970	CMPU	#PRNTBF	08100	CLR	TEMP
04730		INCB	05850		CMPU	TEMP	06980	BNE	CMD15	08110	BRA	EVAL1
04740		CMPB	05860		BNE	FMT10	06990	LDB	#32	08120	EVAL0	-X
04750		BEQ	05870		LDU	PBEND	07000	STB	U	08130	CMPA	#13
04760		CMPB	05880		LDA	-1,U	07010	DECA		08140	BEQ	EVALX
04770		BNE	05890		CMPA	#32	07020	BNE	CMD14	08150	CMPA	#59
04780	MAIN5	LDB	05900		BEQ	FMT801	07030	LEAX	-1,X	08160	BEQ	EVALX
04790		LDX	05910		BSR	PRNT	07040	LDU	#PBEND	08170	CMPA	#48
04800		LDA	05920		JMP	FMT1	07050	JMP	PRNT	08180	BLT	EVAL0
04810		STI	05930	PRNT	LDA	#254	07060	CMPA	#68	08190	CMPA	#57
04820		BRA	05940		STA	\$6F	07070	BNE	CMD3	08200	BGT	EVAL0
04830		LDI	05950		CLR	\$FFDF	07080	LDA	X+	08210	SUBA	#48
04840		ADDD	05960		LDA	LINECT	07090	CMPA	#13	08220	PSHS	A
04850		STD	05970		BNE	PRNT03	07100	BNE	CMD21	08230	LDA	TEMP
04860		CMPD	05980		LDB	LINECT	07110	RTS		08240	LDB	#10
04870		BHS	05990		STD	#13	07120	BSR	CMD26	08250	MUL	
04880		BRA	06000	PRNT00	LDA	DECIB	07130	BEQ	CMD20	08260	STB	TEMP
04890	MAIN6	SUBA	06010		BEQ	PRNT01	07140	LDB	#16	08270	PULS	A
04900		STA	06020		JSR	[A002]	07150	MUL	TEMP	08280	ADDA	TEMP
04910		LDD	06030		BRA	PRNT00	07160	STB	X+	08290	STA	TEMP
04920	MAIN7	DEC	06040	PRNT01	LDA	NUMBER	07170	LDA	#13	08300	BRA	EVAL0
04930		BEQ	06050		BEQ	PRNT03	07180	CMPA	CMD23	08310	LEAX	-1,X
04940		ADDD	06060		LDB	RIGHT	07190	BNE		08320	RTS	
04950	MAIN8	LAST	06070	PRNT02	SUBB	#5	07200	BSR	CMD26	08330	CMPU	#PRNTBF
04960		STD	06080		LDA	[A002]	07210	BEQ	CMD22	08340	BNE	RTS
04970		JSR	06090		JSR	DECIB	07220	ADDA	TEMP	08350	JMP	PRNT
04980	FMT	JSR	06100		CLH	PRNT02	07230	STA	U+	08360	CMPA	#83
04990		JSR	06110		BNE	NUMBER	07240	BNE	CMD24	08370	BNE	BUFOUT
05000		ORCC	06120		LDA	NUMOUT	07250	JSR	PRNT	08380	BSR	BUFOUT
05010		CLR	06130		JSR	#13	07260	LDA	X+	08390	LDA	X+
05020		LDX	06140		JSR	[A002]	07270	CMPA	#13	08400	CLR	TEMP
05030		LDB	06150		JSR	[A002]	07280	BNE	CMD25	08410	CMPA	#13
05040		CMPB	06160		INC	LINECT	07290	LEAX	-1,X	08420	BNE	CMD61
05050		BEQ	06170		INC	NUMBER	07300	RTS		08430	LEAX	-1,X
05060		CMPB	06180		INC	PRNTX	07310	CMPA	#59	08440	RTS	
05070	FMT0	BNE	06190	PRNT03	BSR	LINECT	07320	BNE	CMD24	08450	BSR	EVAL
05080		JSR	06200		LDB	PRNTX	07330	BNE	CMD20	08460	BRA	CMD54
05090		CLR	06210		CMPB	BOTTOM	07340	LDB	#1	08470	JSR	PRNT
05100	FMT1	LDA	06220		BLE	PRNT3	07350	CMPA	#48	08480	TEMP	CMD63
05110		CMPA	06230	PRNT3	JSR	CMD300	07360	BLT	CMD29	08490	BNE	CMD63
05120		BNE	06240		CLR	\$6F	07370	CMPA	#57	08500	RTS	
05130		LDB	06250		RTS	#254	07380	BGT	CMD27	08510	CMPA	#87
05140		CMPB	06260	PRNTX	LDA	\$6F	07390	SUBA	#48	08520	BNE	CMD9
05150		BEQ	06270		STA	\$FFDF	07400	BRA	CMD28	08530	BSR	BUFOUT
05160		CMPB	06280		STA	PBEND	07410	CMPA	#65	08540	LDA	X+
05170	FMT110	BEQ	06290		LDU	-U	07420	BLT	CMD29	08550	CMPA	#13
05180		LDB	06300	PRNTXX	LDA	CMPA	07430	CMPA	#70	08560	BEQ	CMD8Y
05190		BEQ	06310		BEQ	PRNTXX	07440	BGT	CMD29	08570	CMPA	#59
05200		JSR	06320		STA	U+	07450	SUBA	#55	08580	BSR	CMD810
05210		BRA	06330		LDA	#13	07460	INCIB		08590	BEQ	EVAL
05220	FMT101	LDA	06340		LDA	U+	07470	DECIB		08600	BEQ	CMD81
05230	FMT2	CMPA	06350		STA	U+	07480	RTS		08610	CMPA	#127
05240		BNE	06360		CLR	U	07490	CMPA	#80	08620	BGE	CMD81
05250		CMPU	06370		LDA	U	07500	BNE	CMD4	08630	STA	LEFT
05260		BEQ	06380		LDB	LEFT	07510	LEAX	1,X	08640	CMPA	#13
05270		LDB	06390	PRNTX1	DECIB	PRNTX2	07520	CMPU	#PRNTBF	08650	BEQ	CMD82
05280		BNE	06400		BEQ	[A002]	07530	BEQ	CMD300	08660	CMPA	X+
05290		LDB	06410		JSR	PRNTX1	07540	JSR	PRNTX	08670	LDA	EVAL
05300		CMPB	06420		BRA	PRNTX1	07550	BEQ	CMD302	08680	CLR	BEQ
05310	FMT3	BEQ	06430		LDU	PRNTBF	07560	CLR	\$6F	08690	BEQ	CMD8X
05320		STA	06440	PRNTX2	JSR	PRINT	07570	LDY	\$5E0	08700	BMI	CMD8X
05330		BLO	06450		INC	LINECT	07580	STY	\$88	08710	CMPA	LEFT
05340		JSR	06460	PRNTX3	LDA	PBEND	07590	LDU	#INSRT	08720	BLE	CMD8X
05350		JMP	06470		STA	U	07600	JSR	PRINT	08730	STA	RIGHT
05360	FMT4	CMPU	06480	PRNTX4	CMPU	#PRNTBF	07610	BEQ	[A000]	08740	BRA	CMD83
05370		BNE	06490		BGT	PRNTX4	07620	STY	#88	08750	LDA	RIGHT
05380		CMPA	06500		RTS	#32	07630	JSR	PRINT	08760	LEAX	-1,X
05390		BEQ	06510		CMPB	CMD	07640	LDU	#PRNTBF	08770	SUBA	LEFT
05400		LDA	06520		BNE	JSR	07650	BRA	CMD32	08780	TFR	A,B
05410		BNE	06530		LDA	BUFOUT	07660	LDB	LINECT	08790	CLRA	#PRNTBF
05420		CMPA	06540		STA	#32	07670	LDA	#254	08800	ADDD	STD
05430		LEAX	06550		STA	U+	07680	STA	\$6F	08810	RTS	PBEND
05440		BSR	06560		RTS	X	07690	JSR	[A002]	08820	CMPA	-1,X
05450	FMT6	BRA	06570		LDA	X+	07700	INCIB	CMPB	08830	CMPA	#76
05460		STU	06580		ORA	#32	07710	BLT	CMD31	08840	BNE	CMDRTS
05470		LDY	06590		SUBA	#67	07720	JSR	[A002]	08850	LDA	LINECT
05480	FMT7	LDI	06600		CMPA	CMD2	07730	CLR	LINECT	08860	BNE	CMD90
05490		CMPA	06610		BNE	CMD100	07740	CLR	\$FFDF	08870	JSR	CMD30
05500		BEQ	06620		LDA	-1,X	07750	LEAX	-1,X	08880	CMPA	X+
05510		CMPY	06630		RTS	CMPA	07760	CMPA	#70	08890	BEQ	CMD9Y
05520		BNE	06640		CMPA	BUFOUT	07770	JSR	BUFOUT	08900	CMPA	#59
05530		BSR	06650		CLR	X	07780	CLR	FILL	08910	STA	TOP
05540		BRA	06660		STA	CLRB	07790	RTS	CMPA	08920	LDA	X+
05550	FMT701	LDB	06670		LDA	CMPA	07800	BNE	CMD6	08930	BEQ	CMD9Y
05560		LDU	06680		BEQ	CMD13	07810	CMPA	X+	08940	CMPA	#59
05570	FMT702	LDI	06690		STA	U+	07820	BEQ	CMD51	08950	BEQ	CMD910
05580		STB	06700		INCIB	MABUFF	07830	CMPA	#102	08960	JSR	EVAL
05590		CMPA	06710		CMPX		07840	CMPA		08970	BEQ	CMD91
05600		BEQ	06720		LDA	X+	07850	BNE	CMD6	08980	STA	TOP
05610		LEAX	06730		LDA	#13	07860	CLR	TEMP	08990	LDA	X+
05620	FMT703	BRA	06740		BEQ	CMD13	07870	LDA	X+	09000	BEQ	CMD9Y
05630		LDA	06750		PRNT	PRNT	07880	CLR	CMD51	09010	CMPA	X+
05640		BEQ	06760		BSR	FMT801	07890	RTS	CMD51	09020	BEQ	CMD9Y
05650		BSR	06770		JMP	FMT1	07900	CLR	CMD51	09030	LDA	X+
05660		JMP	06780		LDU	#PRNTBF	07910	BEQ	CMD51	09040	CMPA	#59
05670	FMT801	LDI	06790		LDY	#RNDTBL	07920	CMPA		09050	BEQ	CMD920
05680			06800				07930					
05690			06810				07940					
			06820				07950					

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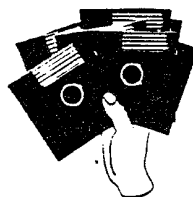
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09130 CMD920 LDA ,X+
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09150 CMPA BOTTOM
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09460 LEFT FCB 5
09470 RIGHT FCB 75
09480 TOP FCB 5
09490 BOTTOM FCB 60
09500 TOTAL FCB 66
09510 SHEET FCB 0
09520 YESTXT FCC /YES/
09530 FCB 0
09540 NOTXT FCC /NO /
09550 FCB 0
09560 SINGLE FCC /SINGLE SHEET/
09570 FCB 0
09580 CONTUS FCC /CONTINUOUS /
09590 FCB 0
09600 BTAB1 FCB 180
09610 FCB 87
09620 FCB 41
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09650 FCB 1
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09990 FCB $D00
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10010 SDRIVE FCB 0
10020 ERMSG FCC /DISK INPUT ERROR/
10030 FCB 13
10040 FCC /PRESS ANY KEY TO CONTINUE/
10050 FCB $D00
10060 GRAN RMB 1
10070 LAST RMB 2
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10100 PRNTBF EQU $500
10110 PBEND FCB $546
10120 TEMP RMB 2
10130 TEMP1 RMB 2
10140 RNDPTR FCB 0
10150 RNDTBL FCB $4029

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10170 FDB $392B
10180 FDB $4725
10190 FDB $E69
10200 FDB $680F
10210 FDB $4C4E
10220 FDB $737D
10230 FDB $7A52
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10280 FDB $3210
10290 FDB $6E59
10300 FDB $3A77
10310 FDB $7E05
10320 FDB $5A2E
10330 FDB $2D3C
10340 FDB $4D63
10350 FDB $5516
10360 FDB $4103
10370 FDB $6044
10380 FDB $2221
10390 FDB $714A
10400 FDB $266A
10410 FDB $572C
10420 FDB $4358
10430 FDB $1470
10440 FDB $6524
10450 FDB $747E
10460 FDB $1823
10470 FDB $375F
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10510 FDB $7C35
10520 FDB $676
10530 FDB $3E0C
10540 FDB $5349
10550 FDB $B2A
10560 FDB $3178
10570 FDB $133F
10580 FDB $755C
10590 FDB $968
10600 FDB $2733
10610 FDB $621E
10620 FDB $27B
10630 FDB $6111
10640 FDB $1730
10650 FDB $4F67
10660 FDB $5645
10670 FDB $872
10680 FDB $1C48
10690 FDB $460A
10700 FDB $4D2F
10710 FDB $6F5D
10720 FDB $D19
10730 FDB $1F6E
10740 FDB $5038
10750 FDB $793B
10760 FDB $1B1A
10770 FDB $6C66
10780 FDB $5174
10790 LINECT FCB 0
10800 INSRT FCC /INSERT ANOTHER PAGE/
10810 FCB 0
10820 INSRT1 FCC /
10830 FCB /
10840 ZZZZ
10850 END START

```



This program is available on *ClipDisk*. A single issue is just \$9.95, a full year is only \$49.95. Phone orders are accepted at (716) 679-0126 - please have your credit card ready. You may also order by mail by enclosing your check or money order to *CoCo Clipboard Magazine*. Our address is 3742 U.S. 20, Box 3, Fredonia, NY 14063 U.S.A. Slightly higher prices for overseas orders.

**CoCo
Clipboard
Magazine™**

Product Reviews

Review Crew

A World At War
SW Software
245 Glenwood
Overland Park, Kansas 66212

Gen. Type : War Game
Requires : 128K Coco 3, 1 drive, joystick
optional Color TV or monitor
highly recommended
Price : \$25.00

Reviewed by R. Krippner

I rate computer games using a scale I call the Backseat Driver Index. The more spectators who gather around the computer to watch and participate, the higher the rating. A World At War just hit a new high on the BDI. It's without a doubt the most sophisticated war game simulation for the Color Computer that we've ever received for review. As far as I know, World At War is unique in the Coco world.

War is a very sophisticated, very complex program. The documentation is a 31 page booklet, and you'll need to study that book very carefully before you can begin to appreciate just how interesting this program is. Also included is a quick reference sheet that contains a list of the various commands. Keep that reference sheet handy. You'll need it.

The basic idea behind War is to create two armies, Black and White, and pit them against each other. The computer can control both, one, or neither of the armies.

The two armies confront one another on a battlefield that is a 64 X 64 grid. Each space in the grid is of a specific type of terrain that can have a significant impact on the movement of the armies.

Each army consists of up to 60 individual units. Each unit has its own unique strength, firepower, movement abilities and other characteristics, and even its own attack strategy.

What makes War so sophisticated is the ability to reconfigure the armies, terrain, attack and movement tactics. By using the built in editing utilities, you can create wars ranging from primitive battles with bows, arrows and swords, to sophisticated interstellar battles with high energy lasers, nuclear weapons or planet busters.

Because of the complexity of the program, some organization is necessary before you begin. First you need to decide on the general rules and basic scenario for the war. Without rules, you could find yourself restricted to bows, spears, swords and knights in armor and find yourself up against an opponent with tanks, bombers and machine guns.

So before anything else, you and your opponent (if you are playing against another person) need to set rules based on the scenario you choose.

The next thing to do is decide on the type of terrain on which the battle is to be fought.

Here is where War begins to really show its strength. The battle field can be completely designed by the players to meet their needs. Each square in the 64 X 64 grid can be given it's own unique type of terrain, represented on the screen as an icon. Up to 200 different icons representing different basic types of terrain are available already, ranging from clear areas, rough areas, different types of roads, rivers, walls, water, forests, cities and mountains.

You can then set up the battle field by placing these icons on the grid to make lakes, rivers, oceans, islands, cities... whatever you wish. And if the icons provided do not fit your needs, you can edit the existing ones or create your own to provide your own types of terrain. As an example, some of the sample war scenarios included with the program took place in space, in a dungeon and in the Pacific Ocean.

War gives you even more flexibility when creating your army. As noted earlier, each army can consist of up to 60 individual units. Each unit has its own values for strength, firepower, when the unit will enter the battle, how easily the unit can move, how quickly it can recover strength after it has been attacked and a whole host of other factors, making each unit's capabilities and limitations extremely realistic.

The tactics each unit will use during battle can also be configured by the players. The units can be told when they should fire, what types of enemy units

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they should fire on and when to retaliate against an attack against them.

Movement tactics can also be set by the players, allowing units to move on their own according to a pre-set strategy rather than requiring the player to move each unit individually. Units can be instructed to move towards certain types of enemies, to remain stationary, to move towards cities or to move in a specific direction.

Each type of unit is represented by it's own unique icon which the players can create. Each unit is placed on the battle field by positioning its icon at the desired location.

As with the terrain editing options, the army editing options are extremely powerful. The sample war games included with the program included armies made up of medieval knights and archers, to star ships armed with lasers.

After the terrain has been set up and the armies created (or one of the several pre-defined scenarios has been loaded) it's time to go to war.

Here also there is a great deal of flexibility. One person can play against the computer, two people can play against each other, or you can have the computer control both armies and just sit back and watch.

During the battle, two different points of view are possible. There is a normal view, which gives you a close up view of a small section of the 64 X 64 "world" in which the battle is taking place, or the World view, which allows you to see the entire battle field at once. Directly controlling the movement of various army units is only possible in the normal view, however, not when in the world view mode.

There are three phases during each round of play:

Observation: This is where you can view the battle field, and plan your strategy. You can observe both armies, check the strengths of the various units, etc. It is during this point that reinforcement units will be brought in, if they were created, and when units damaged during attacks recover strength, if possible.

It is also at this point where transportable units may be loaded or unloaded from transport units.

Fire Phase: This phase allows you to fire on the enemy. You can directly control this phase by selecting which unit you wish to fire, and then selecting the enemy unit you wish it to fire upon.

You can speed up this phase by allowing the computer to complete it for you. If you have the computer finish the fire

phase, the computer will have your units fire at the enemy according to the fire tactics you set up when you created your army.

You can change a unit's fire tactics in the middle of the game if you wish.

Move Phase: It is during this part of the game where you move the units of your army. You just select the unit you wish to

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move with the arrow keys or joystick, and then move it to the new position. When a unit moves, the type of terrain it moves through effects how far the unit may move.

As with the fire phase, you can have the computer finish moving your remaining units for you. If you select this option, the computer will move any units that have not yet been moved according to the movement tactics you selected for those units when you set up your army.

Finally, you can save your game at any point and return to it later and pick up where you left off. This is an extremely important option since just setting up the terrain and the armies can take a considerable amount of time. Actual play can take many hours.

War is not an easy game to master. Setting up a new scenario from scratch takes a considerable amount of time. The author of the game provides many ways to help cut down on the amount of time it takes, such as ways to copy the values from one army unit to another so you don't have to re-type the same information over and over again for all of your infantry units.

But in my opinion, the complexity is well worth it. This simulation is so flexible that it isn't just a game, it's almost a programming language dedicated to designing battle scenarios. If you're a war game buff, or if you're losing interest in mindless shoot-em-ups, *A World At War* is highly recommended.

One final note: A color tv or monitor is almost a necessity with this game because the various icons used to represent terrain and army units are all in living color, and are difficult to see on a monochrome screen. But here the game is flexible as well; you can change color palette to suit whatever type of display you are using.

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Pgm Type: CoCo 3 BBS System under RS-DOS
Requires: 128K CoCo 3, min. 1 drive
512K supported with up to 6
drives (2 RAM, 4 actual)
ADOS 3* Compatible
Price : \$39.95

Reviewed by Bill Laurence

Ah! I see you just purchased that new Sooper Doozy 300 / 1200 / 2400 external modem for your CoCo! Congratulations! Ah! I also see that your long distance phone

bill looks something like the national debt from calling all those faraway BBS's. Maybe it's time to start your own BBS and have people calling you!

Kevin Berner has put together a rather comprehensive BBS program that runs under regular RS-DOS on a 128K CoCo 3. The program is called CEBBS for CoCo Electronic BBS and it comes on a single disk with 45 pages of instructions. If there is any part of this product I had a problem with, it is the manual. The rest of the program and the BBS itself runs very nicely, but the manual is tough to read through because it needs to be reorganized, but let's not dwell on the negatives, let's emphasize the positives.

First: The program will actually run on a stock 128K CoCo with one drive. You will also need an RS-232 Pak (see the ads for Orion, Kenton or CRC in this issue of *Clipboard*) and an auto answer modem. If you have an upgraded Multi-Pak you can use that, or you can use a Y-Cable to handle the disk controller and the RS-232 Pak. Now you won't have much room, if any for message bases or a large upload or download sections with a single drive 128K system, but the program will permit you to get "on the air" at a minimum cost.

Second: The program will run under ADOS 3 with some slight and easy to follow modifications. Since ADOS3 permits 40 and 80 track drives to be used, you must make sure that certain CEBBS files like HEADERS.SYS, INDEX.SYS and MESSAGES.SYS all reside on the same drive. A careful reading of Art Flexer's manuals and Kevin's instructions will get you going. I did not have time to give a complete test using RGB-DOS on stock 35 track drives or using a hard drive.

Third: 512K support is there as well as RAM-Disk support. The only thing to remember about using ram disks with this, or any other program, is that a power failure can wipe out all sorts of important files. Be sure to either back up the ram drives faithfully or don't put anything on them you can't reload from floppies. Kevin makes several suggestions on what to put on your ram drives to speed up program execution. Naturally having a couple of ram drives and a couple of floppies will really allow you to have larger message bases and software sections and it will speed things up considerably, just be sure you know what files are where and how to protect yourself, your users and your files from power loss. Most RS-DOS ram disk programs are compatible with CEBBS.

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Fourth: Free form structured design. What? How can a program be free form and structured at the same time? Sounds like Lawrence Welk (ah one, ana two) trying to sit in with Paul Shaffer and the band on the Letterman show! Well Kevin has given you only a few real "must do's" in setting up the program. Certain files must reside on particular drives with other files. After that menu design, program flow and general operations are up to you. A clever user input routine lets you set permission levels for each caller, and even restricted areas can be set up for the main Sysop and any assistant sysops you may appoint. Ah, but here's the rub and it's the manuals only drawback. But..

Fifth: On line games are available. I'm not much of a game player whether on line or off, but there are those of you who enjoy this venue of computing. CEBBS will let you set up an on line game for your caller. Just make sure your game knows where and how to exit back to the main BBS. Kevin's instructions will tell you just how this is done, including the right USR calls to make it happen quickly and smoothly.

If you really are that first time user I mentioned at the start of this review you are going to be confused by the organization of the manual. All the information you need is here, but it's not all in one place. An experienced BBS-er shouldn't have problems with this (especially if they've had to struggle through a lot of less friendly CoCo BBS's in the past) system, but a new user just might. In particular is the lack of printed examples of what and exactly how menus should be set up. We have all seen some pretty slick menu pages on other BBS's and we'd like to do just as nice of a job. But if your an artistic klutz like me, a few examples would have been welcome. In addition the manual seems to make contradictory statements of what files need to be on what disk(s). If there is any place in the manual that needs that "one ana two" approach to structure and clarity is the "where," and exactly the "how" the system files should be on the disk. For example a file called "INFO.SYS" can be copied on to any disk and "...may reside on different ones if necessary." Then three sentences later the manual says "... Please note that the INFO.SYS file MUST be contained on the default drive." Confusing to say the least. But as I mentioned a little careful reading and experimentation with the program as a whole will get you through it. A quick call to Kevin will also help.

The program does support xmodem uploads and downloads. Frankly despite the development of many other protocols Xmodem still works well day in and day out. True, it can be slow but it works which is more than I can say for many other protocols which have so many variations that not every terminal programs versions will work with other versions.

Should you buy CEBBS? Good question! You've got to understand that a BBS is something that you must devote some time to every day. It may tie up your CoCo from other tasks, especially if you will be running a 24 hour BBS. You'll certainly need a second phone line for 24 hour operation. But the results and rewards can be terrific. A well run BBS attracts faithful and competent users like a good restaurant attracts loyal customers and good sports teams attract faithful season ticket buyers. Those callers will be the source of tons of useful information and programs. They will also become the long distance (or local) CoCo friends you've been looking for to share your thoughts, ideas and concerns. A poorly run BBS is just like that BBS you called the other night... remember with the lack of downloads, the one track message bases populated by brain dead messages etc.

CEBBS is a solid BBS program for RS-DOS users. It permits flexibility in structure and design and the price is reasonable for all that it does provide. Get through the manual and you're set to go on line. Drop us your new BBS number in the mail and we'll give your CEBBS board a call!

DynaStar

Frank Hogg Laboratory, Inc.
770 James Street
Syracuse, NY. 13203
(315)474-7856

Pgm. Type : word processor for OS9
Requires : 512K Coco 3, OS9 Level 2
Price : 149.95

Reviewed by Richard Simoes

DynaStar is actually two programs, DynaStar (DS) and DynaForm (DF), that together make up a word processor that works under OS9. To eliminate confusion, I'll use the program names DS and DF when I'm referring to the specific program and I'll use DynaStar when I'm referring to the word processor package.

This review will focus on the most recent release of DynaStar which requires OS9 Level II. An earlier version is contained on the disk for Level I users.

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DS is a text editor, but it also includes some formatting commands. These commands perform horizontal formatting such as text justification and line centering. DF handles only what would be considered vertical formatting. It keeps track of such things as page breaks, headers and footers, and top and bottom margins. It does not change the text in any way that you formatted with DS. DF just determines where the text will appear on the printed page. Both DS and DF support optional startup files. Whenever you invoke either program, each will look for its startup file, and if found, will read in the file.

DS requires at least an 80 column by 24 line window for the display. There is another startup file which DS reads from your /DD/SYS directory called TERMSET. TERMSET describes the characteristics of the video display. The only parameters worth changing for the Coco are the screen colors and whether or not DS is to use an overlay window. DS will also work with an external terminal connected to a port such as /T2. This is done by describing the external terminal in TERMSET and invoking DS with the optional terminal argument.

If you don't specify a file name when you start DS, you are presented with the 'files' menu. To edit, specify either an old or new file name. If the new file name specified already exists, then the 'old' file is opened for editing, otherwise a new file is created.

DS does not actually edit your original file, but instead edits a copy in the memory buffer and creates a scratch file on the disk called 'xxx.SCR'; where xxx is the name of the file you're editing. Since DS can edit files larger than the buffer size, DS writes out text to this scratch file as you read in more text. When you save what you are editing, the buffer and the remainder of the file being edited are written to the scratch file. Then the original file is deleted and the scratch file is renamed to the original file name. If you abandon editing a file instead, the scratch file is deleted and the buffer is cleared.

One undocumented requirement is that the file you are editing must always be in the current data directory or DS can't do proper file clean up when you're finished editing. You can change your data direc-

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15,000 word dictionary or friends. 256K.

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tory within DS to prevent this. This change is local to DS and is recommended even though you do have access to the shell.

There are a few other capabilities that you can do from the 'files' menu such as toggle the help menu for the editor off or on, display the file names in the data directory, create or list keyboard macros (more on this later), and print the text currently in the buffer. Printing the text in the buffer causes DF to start. This capability is intended to be a quick way to print what's in the buffer to the printer. Ordinarily you would have DF process a saved file from the shell.

To start an editing session, you specify a file name at the 'files' menu as described above or on the command line when starting DS. Either method puts you in the edit window. At the top of the screen in the following order, is the status line, the help menu (if you haven't turned it off), and a ruler. The rest of the screen is the edit window. The status line contains the file name and the current editing modes. DS is in the insert mode, so just start entering text or switch to overwrite mode to type over existing text. Other text modes include auto word wrap and justification.

The horizontal formatting is done with the aid of the ruler. In the ruler you can set a right margin, a wrap margin, and tabs. The wrap margin allows you to left justify text indented from the left margin. When you execute the command, adjust paragraph, the current paragraph will be formatted right there on the screen, in a true what-you-see-is-what-you-get, according to the ruler settings and current justification mode.

Programmers will like the auto indent capability. What this does is begin the next line indented to the position of the first non-blank character in the line above. One note of caution. Don't use the adjust paragraph command or your code will be compressed into a nice neat paragraph.

All editing commands, including cursor movement, involves typing single or double control key (CTRL) sequences. At first this arrangement seemed odd to me, but I was surprised how quickly I was up to speed. The help menu and the keyboard layout I believe had a lot to do with this.

Cursor movement consists of a full complement of commands. In addition to single character movement, there is word ahead and back, go to the beginning or end of line, and screen scroll up or down a single line at a time through the file. Larger cursor movements include the ability to move to the top or bottom of the file or screen, to move forward or back-

ward a page at a time, or go to the next paragraph. Deleting text can be done by character, by word, or by line, each done with several variations.

Block commands are fully supported. Once you mark the beginning and the end of a block of text, it may be copied, moved, killed (deleted), or written to a new file. A moved block is automatically unmarked after the move while a copied block requires you to unmark the block before editing can resume. When coping the same text several times this comes in handy.

There is a find text and a find and replace text command that operates only once. You must do the again command to repeat the action for each occurrence through out the file. To do a global find and replace for all occurrences, you must create a keyboard macro. DS gives you the capability to create macros with a total buffer space of 400 characters to work with. A macro can be made up of any DS commands and executes just like any other command. If you find yourself defining the same macros over and over again, DS will automatically define them for you if you put them in its startup file.

DF supports a number of formatting codes which are all represented by a 'dot' followed immediately by two characters. A summary of the commands can be accessed from the help menu. The formatting codes are embedded in your text file with DS and then will be processed by DF. DF outputs the final formatted file, which can be redirected to any output. DF also supports either single page or continuous page printing and you may specify the range of page numbers you want printed.

As I said earlier, DF handles primarily vertical formatting. With the formatting commands you can set the line spacing, the page length, and the size of the top, bottom and left margins. You can begin a new page anywhere and also assign a new page number. To prevent 'orphan' lines, a conditional page break will test for the available lines left on the current page against the number you specify. A single line header and footer can be defined and will be printed where you specify within the top and bottom margins. Separate odd and even page headers and footers may also be specified.

Macros can be defined which then become your own formatting commands. You can include any DF formatting commands and text within the macro except define new macros. Macros can be executed anywhere on the page, or at the bottom of every page, or anywhere based on if the page number is odd or even.

DF will do file insertion so you can break large files up into smaller ones

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such as chapters for a book. Then print the entire book by calling each chapter from one smaller file. File insertion can be nested to 3 levels if you wish.

If you 'tag' text in the file, it may be included in a table of contents or an index. There is a limit of 400 entries. The 'tagged' text is actually separate text you enter into the file preceded by a format code, not existing text. DF saves the 'tagged' text along with the current page number and prints them together when it encounters the proper format code. Sorting either by the page number or by the 'tagged' text, results in DF printing the table of contents or the index. An index with identically 'tagged' text on more than one page will each be printed on separate lines and not once with all the page numbers listed as is traditionally done.

DF supports mail-merge. Mail-merge allows you to write a form letter containing variables in place of such things as names and addresses. Variables can be substituted from both the keyboard or a file. Since DF doesn't do the horizontal formatting, it can not rejustify the line after text substitution. Therefore, non-justified text is recommended where substitutions occur.

Printer support is provided by making control characters equivalent to printer codes. First, define what codes are to be sent to the printer when each control character (your choice) is encountered by DF. Second, insert the control characters in the text file with DS. Whenever DF encounters a control character during formatting, it substitutes the printer codes for the control character. Once I defined the control characters, I found putting them in DF's startup file saved me the trouble doing it again.

I would rate DynaStar's documentation as good, missing excellent, solely because of some omissions. The 36 page manual is clearly written and includes both an index and a table of contents. There is also an application section to help you with startup files and keyboard macros. Missing from the manual is an explanation of some formatting codes and how to define printer codes. I found most of this information in 'read me' and example files on the disk. The missing format codes do appear in DS's help menu, however. If you can't find an answer to a question, I've found Frank Hogg to be a strong believer in user support. It was with his help that I found out that you must only edit files in the current data directory.

DynaStar should meet the needs of most users. I recommend DynaStar to anyone willing to put in a little time to learn this powerful word processor.

Big BASIC

Danosoftware

P.O. Box 124, Station "A"
Mississauga, ONT L5A 2Z7
Canada (416) 897-0121

Pgm. Type: UTILITY, allows BASIC to use all memory.

Requires : CoCo-3, 128K or 512K, Disk drive.

Price : \$39.95 + \$2.50 shipping, U.S.

Review by: Jim DeStafeno

Big BASIC is a new type UTILITY for the CoCo. It is an enhancement to the limited Operating System of RS-BASIC. Time will tell, the importance of Big BASIC to the CoCo community may rank right along with TeleWriter, ADOS and RGB-DOS. (It is compatible with RGB-DOS and the latest issue of ADOS-3, but not ADOS Extended, nor Hyper I/O.)

Big BASIC runs from disk, on a CoCo 3 only. It allows the RS-BASIC programmer to use all of the 128K/512K of memory in the computer. This not only allows BIG RS-BASIC programs, up to 472K long, (and in the not too distant future, 1Mb), but large programs no longer need be "chained" from floppy, hard disk or ramdisk. The 32K maximum BASIC program size barrier is forever broken.

In a 512K machine, up to 58 programs (or program parts totaling max of 472K) can be in memory at the same time up. (In the 128K, up to 9 programs, 92K total.) Big BASIC divides the program memory area into 8K blocks. Any one "runable" program can up to a "group" of three of these blocks long, 24K max. It is a simple matter to move from one program block sets to any other program block set using two new Big BASIC commands, BLOCKnn and WINDOWn.

Since all the memory is made active, there is enough room to do all work in memory, which is the fastest method possible. Combine this with the instant moving from block to block, and it's easy to see the action of Big BASIC is as fast as under RS-BASIC. Quite a thing!

One of the things that makes Big BASIC so fast is the no delay during the block to block movement. The sub-programs are preloaded in memory block "groups", just sitting there ready to run. A "group", 1 to 3 blocks, can be 8K, 16K or 24K long. Therefore a GOTO to a given line number within a running "group"; is just as fast as normal RS-BASIC.

Looking at the technicals of Big BASIC, we find three new commands; WINDOWn, BLOCKnn and VSWITCH. In Big BASIC, "win-

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dow" refers to two different portions of memory totaling approximately 32K; total of four 8K blocks. Each partition normally contains two different programs.

One window may contain the control or menu program, while the other window may contain the object program. Unlike OS-9, only one of these windows can be active (awake) at a time. (Yes, there is a "sleep" state.)

The manual calls these windows Window1 and Window2. Window1 is generally used to run the menu program. The menu can be manually operated, INPUT, INKEY\$, etc. or totally automatic, or a combination of the two. Normally Window2 is where the program, (or parts of a program, or many separate programs) is/are run.

Moving from one window to the other is as simple as using the "Windowdown" command. A neat point is, when a window is moved it just goes to "sleep". It stops executing, but all the pointers, etc. remain in place. Upon returning the program "awakens" and resumes running from where it stopped when the Window was left.

Upon startup there is no Window2 and Window1 has almost 29K. Window2 can be created with a size of either 8K, 16K or 24K of usable memory from Window1. There are four of these "window blocks", also approximately 8K each. They are distributed between the two Windows by the window sizing activity. If one of the four blocks is assigned to Window1 then Window2 automatically gets the other three. If Window1 is assigned two, then Window2 gets the remaining two; etc.

The next thing to know is Big BASIC's special save. Big BASIC modifies the RS-BASIC operating system in such a way that BASIC programs can be saved with the SAVEM command. Such a save under Big BASIC allows the program to auto-start with all variables intact. The save(s) is/are made from Window1.

Big BASIC assigns each of these blocks a number and is accessed with the new BLOCKnn command. The "nn" represents a number, which can be between 48 and 55 in a 128K machine, 0 and 55 in 512K. Available Blocks depend on the type program to be run; which is explained in the manual.

BLOCKnn is also used to tell Window2 which normally unused portion of memory to make active. It too is simply done from Window1 with a BLOCKnn:WINDOW2 command line. The example will also make Window2 active. If the program in Window2 is in the "sleep" state because it had been exited from previously, it will become active and begin processing as soon as the Window2 is made. (Note, a program can be saved so that it will auto-start the first

time it's Window is made active.)

That's all there is to it. Window1 normally contains a menu program that tells which part of memory to make active and run in Window2. As noted above, the moving back and forth between the windows is done with the Window command AND when a window is moved to, the program in the window resumes processing right where it stopped when the window was exited.

This resumption of the processing right after the exit point allows the menu program to run in a preordered manner, and thereby direct the action that occurs in Window2.

We should also discuss the three possible methods of variable manipulation, all centered around the new Big BASIC command, VSWITCH. When this command is executed, the variables and their values change windows. However, while Vswitch is invoked, only processing can be done; no Save, Block move, etc. This Vswitch command is worth it's weight in gold.

If the values from a database are preloaded in to the memory Blocks and the program in Window1 directs Window2 to a given memory Blocknn, and the Vswitch command is invoked, the values in the two windows switch. Therefore, the program in Window1 can work with the previously stored values from Window2.

True variable Chaining can be accomplished by working the action the other way. That is, the variables to be worked "on" are included with the menu program in Window1. Just after jumping to a new Block via Window2, which contains the "next" part of the execution program, Vswitch is executed which puts the variables and their values in Window2, which are worked with as the program runs.

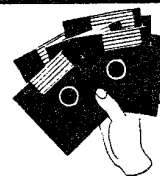
When all is ready to move Window2 to the next Block part of the program, the variables along with their new values are put back in Window1 with Vswitch execution. After the move is done, a new program part is in Window2, and the program part begins running. The first thing done is a Vswitch, putting the variables and their values from the previous processing in the now active Window. The switching action is as fast as everything else; done in a wink of an eye.

At the request of one purchaser, the Big BASIC disk includes a subroutine that will move variables from window to window without using Vswitch. So, whatever flavor you want in this area, Big BASIC provides it.

My wish list for Big Basic is pretty short, just one item, but it's a big one. Like OS-9, Big Basic should have a second active process, something like a third

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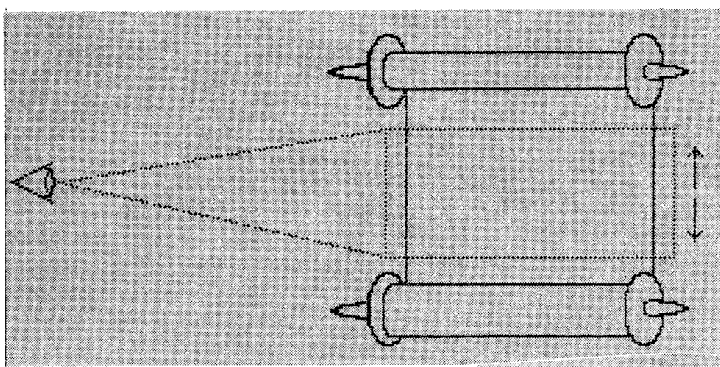
Glad You Asked . . ."



Robert Gault

For a Christmas present this year (1989), I received the first request letter sent to this column. Coco3 owner, Roger I. Carlson, of Tinley Park, IL asks how to scroll a width40 or PMODE4 image completely off the monitor, leaving a blank screen. Just to make it more of a challenge, the scrolling should be done from Basic.

There are two methods of scrolling a screen. To explain them, it will help to look at the figure. Scroll really is a noun not a verb but it is a convenient image for what we see on a movie, microfilm, or video screen.



The first method pulls the scroll past the viewing frame. This is easy with film. With a computer, we must move the viewing screen past video memory. This is possible with a Coco by sending data to the SAM (\$FFC6 - \$FFD3) or GIME (\$FF9C - \$FF9E) chips. Unfortunately, the SAM chip's resolution, 512 bytes, is much too coarse to be useful. The GIME chip resolution is much finer but there are still problems. The memory just past the W80 text screen is not easily accessible to Basic. It needs to be erased for a blank screen to be seen. A complex assembly program would be needed to do this job properly for W32 or W80 screens. The method does work well with PMODE screens. First, you must PCLEAR 8 graphic pages and PCLS pages 5-8. This is simple, but is a waste of memory.

The second method keeps video memory constant and imitates the above by rapidly redrawing the image; each time changing the vertical location. This is easily done for text screens by repeatedly sending PRINT. Basic is too slow to redraw a PMODE

screen so an assembly program is needed. Happily this type of ml. program is simple but is still slow compared to the GIME method.

Try each of the programs below and compare the results. All methods are illustrated even if they are not very useful. The slight jerkiness of the GIME scroll is unavoidable in Basic. The GIME chip of course is only in the Coco 3. All Coco owners can use the ml. graphics routine. A simple graphic image for Coco 3 users to experiment with is the terrible trio seen with ALT CTRL RESET, however, the programs draw a pattern. Since the pattern is the same for all graphics programs, just type it once and MERGE it thereafter.

If there is enough reader demand (send letters to Ted Paul), I might be talked into presenting an assembly program which uses the GIME chip to scroll width40/80 text over a two page text screen.

DETAILS OF SAM CHIP

\$FFD3 SET	32768	VDG OFFSET
\$FFD2 CLEAR		
\$FFD1 SET	16384	in bytes
\$FFD0 CLEAR		
\$FFCF SET	8192	
\$FFCE CLEAR		
\$FFCD SET	4096	
\$FFCC CLEAR		
\$FFCB SET	2048	
\$FFCA CLEAR		
\$FFC9 SET	1024	
\$FFC8 CLEAR		
\$FFC7 SET	512	
\$FFC6 CLEAR		

DETAILS OF GIME CHIP

\$FF9D BIT 7	\$40000	VDG OFFSET
BIT 6	\$20000	in bytes
BIT 5	\$10000	
BIT 4	\$8000	
BIT 3	\$4000	
BIT 2	\$2000	
BIT 1	\$1000	
BIT 0	\$800	
\$FF9E BIT 7	\$400	
BIT 6	\$200	
BIT 5	\$100	

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```

BIT 4      128
BIT 3      64
BIT 2      32
BIT 1      16
BIT 0       8

```

```

$FF9C BIT 3      8      VDG SCROLL
      BIT 2      4      offset in lines
      BIT 1      2      used with text screen
      BIT 0      1      HRES letters=8 lines

```

```

10 'TO SCROLL TEXT SCREENS USING
  > PRINT <
20 'L=SCREEN LINES-1; 15 FOR W3
2; 24 FOR W40/80
30 L=24
40 FOR I=1TOL:PRINT:FORT=1TO50:N
EXTT,I
50 END

```

```

10 ' TO SCROLL HRES TEXT SCREENS
  WITH GIME CHIP
20 ' WORKS BEST AT W40 IF W80 WA
  S CLSed
30 ' OV IS OFFSET VDG
40 ' W IS WIDTH OF HIGH RES TEXT
50 ' &HE7 INDICATES SELECTED SCR
  EEN 0=32;1=40;2=80
60 ' &HFE04 = WIDTH OF H.RES TEX
  T
70 ' H.RES TEXT STARTS AT &H6C00
  0
80 ' &H6C000/8 = &HD800
90 IF PEEK(&HE7)=0 THEN CLS:PRINT
  "MUST BE ON HIGH RES SCREEN":END
100 OV=&HD800:W=PEEK(&HFE04)/4:C
  =1/256
110 FORJ=1TO24:OV=OV+W:T1=OV*C:T
  2=INT(T1):FORI=1TO7:POKE&HFF9C,I
  :FORT=1TO10:NEXTT,I:POKE&HFF9E,&
  H100*(T1-T2):POKE&HFF9D,T1:POKE&
  HFF9C,0:NEXTJ
120 CLS:POKE&HFF9D,&HD8:POKE&HFF
  9E,0
130 ' FLICKER CAN NOT BE AVOIDED
  IN BASIC
140 ' HRES CHARACTERS ARE 8 LINE
  S HIGH

```

```

10 ' BASIC PROGRAM          VE
  RY SLOW
20 'TO SCROLL PMODE4 SCREENS BY
  REDRAWING SCREEN
30 'ST= START OF PMODE SCREEN
40 'EN= END OF PMODE SCREEN
50 'CO=0 FOR BLACK, 255 WHITE
60 POKE&HFF9D,0:WIDTH32:PCLEAR4:
  PMODE4,1:SCREEN1,1
70 PCLS1:FORY=0TO191STEP10:LINE(
  0,0)-(255,Y),PRESET:NEXT
80 FORY=191TO0STEP-10:LINE(0,Y)-
  (255,191),PRESET:NEXT
90 ST=PEEK(&HBA)*256+PEEK(&HBB):
  EN=PEEK(&HB7)*256+PEEK(&HB8):CO=
  255
100 A1=31:A2=32:A3=33
110 ' THE MAIN CODE LOOP
120 FORK=&H1 TO &HC0
130 FOR I=ST TO EN-A3:POKE I,PEE
  K(I+A2):NEXT

```

```

140 FOR J=I TO I+A1:POKE J,CO:NE
  XTJ,K
150 ' COCO 1&2 OWNERS OMIT > POK
  E&HFFD9,0:WIDTH32 <
160 '                               USE > PO
  KE&HFFD7,0 <

```

```

10 'SCROLL PMODE4 SCREEN USING G
  IME CHIP REGISTERS
20 WIDTH32
30 ' CLEAR SECOND GRAPHICS SCREE
  N
40 PCLEAR8:PMODE4,5:PCLS1
50 '
60 ON BRK GOTO 240
70 PMODE4,1:SCREEN1,1
80 PCLS1:FORY=0TO191STEP10:LINE(
  0,0)-(255,Y),PRESET:NEXT
90 FORY=191TO0STEP-10:LINE(0,Y)-
  (255,191),PRESET:NEXT
100 VG=(458752+PEEK(&HBA)*256+PE
  EK(&HBB))/8:C=1/256:OV=VG
110 T=OV*C:B1=INT(T):B2=256*(T-B
  1)
120 POKE&HFF98,128:' SET GIME TO
  GRAPHICS MODE
130 POKE&HFF99,8:' SET GIME TO 2
  56 WIDTH, 2 COLORS
140 POKE&HFF9A,63:' WHITE BORDER
150 PALETTE0,0:PALETTE1,63:' MAK
  E HRES COLOR = PMODE4 COLOR
160 POKE&HFF90,&H4C:' ACTIVATE G
  IME CHIP AT WIDTH 32
170 POKE&HFF9D,B1:POKE&HFF9E,B2:
  ' SET INITIAL VDG OFFSET
180 FORI=1TO192
190 T=OV*C:HB=INT(T):LB=&H100*(T
  -HB)
200 POKE&HFF9D,HB:POKE&HFF9E,LB
210 OV=OV+&H4:NEXT
220 PCLS1:POKE&HFF9D,B1:POKE&HFF
  9E,B2
230 GOTO230
240 RGB
250 ' OV=VG= VDG OFFSET
260 ' $BA-$BB START OF GRAPHICS
  SCREEN

```

```

10 'SCROLL PMODE4 SCREEN WITH ML
  CODE AND NOT GIME
20 POKE&HFFD9,0:WIDTH32
30 CLEAR200,&H7EFF
40 FOR M=&H7F00 TO &H7F30:READ A
  $:POKE M,VAL("&H"+A$):NEXT
50 DATA FF, 1A, 50, C6, C0, E7,
  8D, 0, 28, 10
60 DATA 9E, B7, 31, A8, E0, 34,
  20, 9E, BA, EC

```

```

70 DATA 88, 20, ED, 81, AC, E4,
  25, F7, B6, 7F
80 DATA 0, 1F, 89, ED, 81, 9C,
  B7, 25, FA, 6A
90 DATA 8D, 0, 6, 26, E4, 1C,
  AF, 35, A0
100 DATA AC, E4, 26, F7, B6, 7F,
  0, A7, 80, 9C
110 DATA B7, 26, FA, 5A, 26, E9,
  1C, AF, 35, A0
120 PCLEAR4:PMODE4,1:SCREEN1,1
130 PCLS1:FORY=0TO191STEP10:LINE
  (0,0)-(255,Y),PRESET:NEXT
140 FORY=191TO0STEP-10:LINE(0,Y)
  -(255,191),PRESET:NEXT
150 POKE&H7F00,255:' SET BACKGRO
  UND COLOR 255=WHITE 0=BLACK
160 EXEC&H7F01
170 GOTO170
180 ' COCO 1&2 OWNERS OMIT > PO
  KE&HFFD9,0:WIDTH32 <

```

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```

000 *          ASSEMBLY PROGRAM TO SCROLL PMODE4 SCREENS
001 *
100          ORG    $7F00      ADJUST TO SUIT
110 *ROUTINE TO SCROLL A PMODE4 GRAPHICS SCREEN
120
130 COLOR    FCB    255      COLOR CODE TO BE LOADED FROM BASIC
140 *          DEFAULT COLOR IS WHITE
142 START    ORCC    #$50      TURN OFF INTERRUPTS
150          LDB     #192      LINES PER PMODE4 SCREEN
152          STB     COUNT,PCR
160          LDY     $B7      END OF PMODE GRAPHICS SCREEN
170          LEAY    -32,Y     ONE LINE SHORT FROM END
180          PSHS    Y        SAVE IT FOR FUTURE REFERENCE
190 LOOP1    LDX     $BA      START OF PMODE GRAPHICS SCREEN
200 LOOP2    LDD     32,X      GET 2 BYTES DATA FROM NEXT LINE
210          STD     ,X++      STORE IT IN CURRENT LINE AND MOVE POINTER
220          CMPX    ,S        COMPARE WITH LAST LINE TO MOVE
230          BLO     LOOP2
240          LDA     COLOR
242          TFR     A,B
250 LOOP3    STD     ,X++      CLEAR 2 BYTES OF LAST LINE ON SCREEN
260          CMPX    $B7      END OF SCREEN?
270          BLO     LOOP3
280          DEC     COUNT,PCR  REDUCE COUNTER UNTIL ZERO
290          BNE     LOOP1
292          ANDCC   #$AF      TURN ON INTERRUPTS
300          PULS    Y,PC      GO BACK TO BASIC
302 COUNT    RMB     1
310          END     START

```

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window that could be active even while Window1 or 2 is active. Such a feature would be able to precompile reports while the main program was doing it's normal processing. As such, there would be no delay before printing reports. That also means the reports could be displayed at any time since they would always be in the compiled form. In addition the manual needs to be amended for clarity, but Danosoft is a new company and Big BASIC is a new program. I'm assured the manual will be improved with each printing.

C.C.B.M.S., the business program series printed in *CoCo Clipboard*, has been put on Big BASIC. The speed of index searches and module changes is as fast as anyone could want, equal to professional programs running on multi thousand dollar business machines. Big BASIC does it's intended job very well.

Big BASIC adds much needed quantity with speed to the RS-BASIC programmer's arsenal. Any serious RS-BASIC programmer should put Big BASIC on his list of "must have" programs.

MVCanvas 2.0 - OS-9 Paint Program

Finally, a professional OS-9 Level II paint program is available for the Color Computer 3. MVCanvas not only supports true windows, MVCanvas is the ONLY Color Computer graphic editor that gives you more choices than just a 320 by 200 pixel, 16 color graphic resolution. *

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CoCo 'N Amateur Radio

Jerry Murphy K8YUW

Since the last copy I sent Ted about my shack, there have been a few changes. The National Weather Service wants me to provide a backup function to one of the other ham radio operators involved in the Hurricane Communications plans, but the program they are customizing for my use is only suitable for an IBM-compatible machine. There were none in my collection until a few days ago. I picked up a used 1000 SX, but only because I need it for that particular program; I hope the OS-9/UNIX/XENIX community will forgive me for this indiscretion. I had to sell the Model II to help fund this new acquisition.

There have been a number of tropical weather events this year, and during each one my ham radio station communicated between the National Hurricane Center in Coral Gables, FL and people in the affected areas. The Coco3 with WizPro played a part in each. There is a commercial radio station in Mobile, AL (WLO) that transmits weather broadcasts to ships at sea, (and eavesdroppers like me!), using both CW and SITOR/FEC. SITOR and AMTOR are almost identical. We hams use AMTOR (AMateur Teleprinting Over Radio), and normal commercial channels use SITOR (Simplex Telex Over Radio). Both modes are nearly identical for our purposes, so we will just stick with the one I use: AMTOR. This mode is a synchronous transmission of seven-bit code that essentially provides error-free messages.

At either end of a connection over telephone wires, we already know we need a modem (MODulator/DEMODulator). Similarly, in ham radio work using computers there is need for a modem of some sort at either end. We call these devices Terminal Node Controllers (TNC's). The simplest TNC provides an interface allowing the computer to communicate with the transmitter and receiver such that packets of 128 bytes are sent or received as a group; the length of the packet is adjustable in some units. Each packet is inspected by the receiving end to see if the CRC received as part of the packet agrees with the CRC measured by the receiving computer. The receiving site sends either an ACKnowledgement or a Negative ACKnowledgement (ACK/NAK). A NAK results in the packet being sent again by the transmitting site. This abbreviated de-

scription applies specifically to packet radio, but understanding this simple exchange helps in the understanding of one of the two types of AMTOR, with some modification.

One of the two types of AMTOR is called ARQ, and the other is FEC. We'll get ARQ out of the way first, then expand on FEC, which is the mode I use to receive weather advisories. ARQ is called Mode A, and depends on a ReQuest for repetition from the receiving site. Messages are sent in groups of three letters in 210 milliseconds. Then the transmitter pauses for 240 milliseconds, listening for the acknowledgement or request for retransmission. If it receives an acknowledgement, it sends the next three letters; if it instead gets the RQ, it re-sends the same three letters. Should the communications path break down due to interference or fading signals, the two operators immediately know exactly what the other system has sent or received so far in the exchange; neither CRT displays non-acknowledged groups. On the air, it sounds like a fast chirp-chirp-chirp.

The second AMTOR mode is Mode B, Forward Error Correcting (FEC). In this mode, the transmitter sends a continuous stream of characters in a synchornous manner, sending each character twice, but with an offset of 280 milliseconds. Another way to say this is to send a character, then four more characters, then repeat the first one, etc. An interleave ratio of 4:3 is maintained between marks and spaces. Prior to the message, there is a string of 10 idle characters, another string of 5 idle characters is inserted following each group of 28 letters for synchronization purposes. While a noise spike might take out the first occurrence of a character, it is unlikely that a spike will get both of them with 280 millisecond repetition. The TNC keeps track of all the checking and comparing of characters, as well as the synchronization signals. The end result is much more accurate text received than was possible with the older Baudot methods of sending Radio TeleTYpe. But at these speeds, no mechanical machine could hope to keep up with the data stream, nor could it do the CRC

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checking required; a computer is a necessary part in all of this, and the Coco is ideally suited for the purpose if it has a proper terminal program.

The various transmissions I receive come basically from three sources. The American Radio Relay League sends bulletins of interest to amateur radio operators nearly all day, almost every day, on several different frequencies. They use Sideband, CW, Baudot and FEC on most of their schedules. Consult QST magazine for their complete schedule, but look for them basically on 3.625, 7.095, 14.095, 21.095 and 28.095 MHz for both Baudot and FEC at various times of day and evening. WLO in Mobile, AL uses carrier frequencies of 4352, 6499.5, 8707.5, 13083.5 and 17199.5 KHz, nearly around the clock for their SITOR transmissions; many others use SITOR, and most are found very close to these frequencies. Additionally, you'll find radio amateurs ragchewing or passing traffic to one another close to 3638, 7075, 10143, 14075, 21075 and 28075 KHz. It helps to use a tuning device such as an oscilloscope to zero in on their frequencies; look for a pair of crossed ellipses, looking much like a "+". You'll need a radio receiver, a TNC of some type

that includes AMTOR in its repertoire, and a computer with terminal program as a minimum to listen in on any of this.

In the next installment, I'll delve more into packet radio. This mode, too, requires a TNC and computer terminal. With a common Model 100 and TNC hooked up to your VHF radio, you can exchange packet radio messages with hams all over the world, sometime in the near future via orbiting satellites!

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One Meg. Upgrade

Kevin Darling

Reason For The One Meg. Upgrade

The first thing hackers say when they see a new machine, is "how do I expand it even more?" While 512K has been very useful under OS-9 L-II, the rule of thumb in computers is always "ya never have enough RAM".

If RAM prices hadn't gone sky high for a year or two, I think we'd have seen 1 meg upgrades long before now. The technology to do it has always been around, but the cost would've been too much until just lately.

Anyway, that's something for the business types to haggle over. Instead, this is just a short history of the Disto upgrade. What happened was something like this:

Back in May of 1989, I got a couple of calls from CoCo third party suppliers who had come up with 1 meg designs. However, both had come up with simple bank switching schemes, which wouldn't work under OS-9 (two banks of 512K each).

So I started writing up a tutorial on what hardware would be needed to build a usable external DAT (Dynamic Address Translator) for the CoCo-3. My original intention was to post that text, and anyone who wanted to actually finish the 'minor details and build one could go ahead and do so.

Before I could post it, I got another call. This time it was Tony DiStefano, who complained that he was bored and needed a project. As usual <grin>, I tried to talk him into doing a color video digitizer. Also as usual, it didn't go over. I happened to mention the DAT idea, and he DID click on that. I described what had to be done, and sent Tony my idea file. I don't think he needed it, as he understood the basic concepts. All I had to do was specify where certain special registers should be.

It wasn't a rush project at all. RAM prices were still falling, and we all tell ourselves that "the RainbowFest is a long time away" <smile>. Tony worked on it now and then, a few minutes a week, the whole way.

So a couple of months later, Tony called and said that he had found time to draw up a complete design. Weeks after that, he found time to make a wired proto-

type of the main board, and it seemed to take the correct data. Later on, he finally got around to adding in the extra 512K RAM, and was ready for testing. It seemed to work, but he wanted to change some things.

The First Prototype

Finally, one Saturday he called and said "It's running, and seems to work under RSDOS testing. Now I need OS-9 patches!". And I hadn't even looked into this yet. Ouch! The rest of the night I spent studying the kernel code and creating a new version for him to try. Turned out to be easier than I thought, really. Sunday night he tried the first version, and it failed. Drat. I found my mistake and sent him new files.

Monday night, he got the new files and booted up into L-II.. but with no video. He wasn't sure it was working, so I had him do a "mfree >/p" to see. Sure enough, out came "904K free"... hot dog! A few minutes later we figured out that he hadn't included my new Grfdrv. After changing that, he then booted again and everything worked perfectly. We were pretty excited!

We announced our success on the networks the next day, Sept 18, and by morning, CRC was getting calls from people wanting to get in line for the upgrade, and it wasn't even for sale yet!

Knowing I wanted to do further testing (and also not being able to stand the wait - hehe), Tony shipped this first board off to me. But it wouldn't work on my machine! I dug out my soldering iron for the first time in years, and spent almost a week redesigning the board, until finally it worked on my CoCo.

When I called Tony to tell him, it turned out that he had ALSO spent the time redesigning his second board... and incredibly, we had BOTH come up with the same final circuit! That made us feel better... everything seemed solid.

The Results

I've been using this board now for over a month, with zero problems. In fact, my

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The upgrade plugs into a header which you must solder to the top of your 6809 cpu. From there, one wire goes to a new 512K RAM board which plugs in just under your original 512K upgrade. A few patches to OS-9's kernel and graphics drivers, and you're done. I think the production board will use an external power supply, but I've been running fine without one here, since I also use a CMOS low power 6309 cpu.

Bob van der Poel Software
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[illegible]

Painless OS9

Randy Krippner

Occasionally I get some pretty interesting comments and questions from readers. While I reply to everyone who writes, I normally don't have space to respond in the magazine. But since some of the questions or comments might be of interest to other readers, we decided to publish some of them this month.

Q. Whenever I try to open a graphics window under OS9 the text disappears. All I see on the screen are dots.

A. Graphics windows have no predefined character fonts. You need to merge the STDFONTS file in the SYS directory to provide the graphics windows with a character set to work with. Just add a line to your Startup file to merge the STDFONTS file whenever you boot up. Once the STDFONTS are merged with the system, they are available to any graphics window from then on. A line like "merge /d0/sys/stdfonts" in your Startup file should do it.

Q. When I upgraded to a Coco 3 and OS9 Level 2 I found that T/S Edit and many other of my Level 1 programs that used a hi-res graphics screen would no longer work. I know they will because other people have talked about using them. What am I doing wrong?

A. T/S Edit and other Level 1 programs that create a hi-res graphics display screen require the old VDG display mode. If you use Config to create a boot disk that comes up in the 40 column mode, Config may not be including the VDG drivers in your boot file. Without the VDG drivers, T/S Edit and other software that requires the old Coco II graphics modes won't work.

Make a new boot disk using Config, and this time select the 32 column display mode. T/S Edit should run fine from it. If you need the 40 or 80 column displays, you can always create a new device window using the desired display format.

Q. I just bought OS9 Level 2 and Multi-Vue for my 512K Coco 3. I also have the C compiler. The Multi-Vue documentation mentions a file called CGFX which is supposed to add Level 2 graphics commands to C, and several C header files that have the definitions for accessing Multi-Vue, the mouse and windows. But no such files are on the Multi-Vue disks. Where are they?

A. For reasons known only to Tandy, the C files described in the MV docs are located in the OS9 Level 2 Development System (Cat. # 26-3032, \$99.95) while the documentation that explains them is bundled with Multi-Vue.

Q. I've recently seen something called "Forth09" being sold for the Coco, and didn't really understand what they were talking about. What does this program do?

A. Forth09 is a programming language based on Forth, a language developed by Charles Moore back in the 1970s. Several versions have been offered for the Coco over the years, this one from P.D. Johnson being the most recent.

Forth is different, and definitely is an acquired taste. If you're used to high level languages such as Pascal, Basic09 or BASIC, it will take you some time to get used to Forth's radically different philosophy. Before you take the plunge, I suggest you get a book called Starting Forth by Leo Brodie to get an idea of what it is like.

Q. Why do the Coco 3's hi-res graphics take up so much memory? I was very surprised when I found out how much disk space a 320 X 192, 16 color picture took up when I read your articles about Deluxe Power Graph.

A. The 16 color, 320 X 192 graphics mode requires about 30,700 bytes of storage space. In this mode there are 61,440 pixels on the screen. Each pixel takes up 4 bits, or one half of a byte (usually called a nybble.) of storage space. Why 4 bits? Well, 4 binary digits can be used to represent any number between 0 and 15, for a total of 16 different values, which just happens to correspond to the 16 different colors the C3 can display in this mode.

That's why color graphics take up so much memory. Not only does the computer have to know which pixels should be set, it has to know what color the pixel should be set to. The more colors the computer is capable of generating, the more space each pixel will take up. If we were working with a computer that could handle 256 colors, for example, each pixel would take up a full byte of space.

Q. Can the Color Computer 3 be expanded beyond 512K?

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A. Yes and no. The Coco cannot directly handle more than 512K without completely redesigning the computer. Some companies do market RAM expansion cartridges or internal circuit boards, but these devices are used as RAM disks, which simulate very fast disk drives.

Q. Why didn't you use Multi-View's menuing capabilities in your icon editor program or Deluxe PowerGraph?

A. If you take a look at Dale Puckett's OS9 column in the July, 1988 issue of Rainbow you'll see why. He set up all of the Basic09 data types necessary to access MV's menuing system in that issue, and took almost 150 lines of code to do it. The fact of the matter is that any competent Basic09 programmer could write his or her own auto-menuing utilities using Basic09 and the GFX2 module, and could end up with a utility that is almost as fast, a heck of a lot easier to use, and which takes up less memory than is required to access Multi-View's menuing system.

Q. Do I really need the CM-8 monitor for the Coco 3? I can't see spending \$300 on a monitor for a \$140 computer. Could I use one of the cheap IBM type monitors on it?

A. The type of monitor you should buy depends on what you're going to do with the computer. The Coco 3 has three types of video outputs: standard TV output like the old Coco II, composite output for composite monitors, and RGB output for analog color monitors such as the CM-8.

The analog monitors such as the CM-8 are nice, but not really necessary. If you are going to be doing a lot of work in the 640 X 192 graphics mode or use a program such as Window Master, which uses even higher resolutions, then an RGB monitor is a good idea because of problems with overscan. For most Coco 3 graphics programs and games, a color TV or inexpensive color composite monitor works well. If you do a lot of word processing, then a composite monochrome monitor is probably the best choice.

You can't use TTL (IBM type) monitors on the Coco.

Q. I've been trying to find the OS9 Pascal and C compilers for OS9, but haven't had any luck. My local Radio Shack says they can't get them any more. What happened to them?

A. To the best of my knowledge, Tandy no longer carries the Microware Pascal compiler. You might find it available at bargain basement prices at some R.S. stores, but once those are gone, that's it. The only Pascal compiler still left on the market for the Coco is Deft Pascal from TCE, and it runs under RS-DOS, not OS9. It is, however, an excellent compiler. You can

contact TCE at (301) 963-3848 or (800) 4TC-4TCE.

The Microware C compiler is, I'm told, still available, but is not normally carried by Radio Shack stores and must be ordered. Again, keep your eyes open. The normal retail price is around \$99, but I picked up a copy a few months ago on a "manager's special" for \$30.

Editors Note: Tandy still has the PASCAL program available for the CoCo from its Express Order Software Division. The stock number is 26-3034. You can order through your local Radio Shack store or call 1 (800) 321-3133.

Next time I'll wrap up a few loose ends in the final installment of Painless OS9. Yep, that's right. Painless OS9 has just about come to the end of its usefulness. A column like this could go on just about forever, I suppose, since OS9 is such a rich, powerful operating environment. But Painless OS9 was intended to assist newcomers to OS9, and as our motto goes, 'no one is a novice forever.' If you've been following along since the beginning, you certainly are no longer a novice.

As always, if you have any questions or comments, please write. Include an SASE if you want a reply. You can reach me at: Randy Krippner, 1014. W. Hwy. 114, Lot 29, Hilbert, WI 54129.

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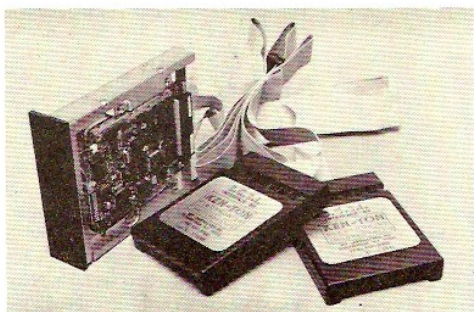
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